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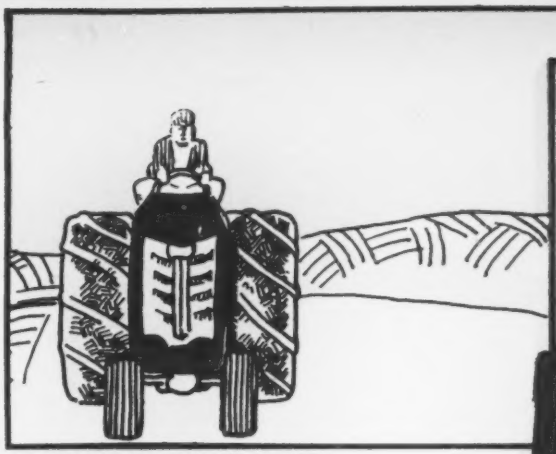
# VIRGINIA ECONOMIC INDICATORS

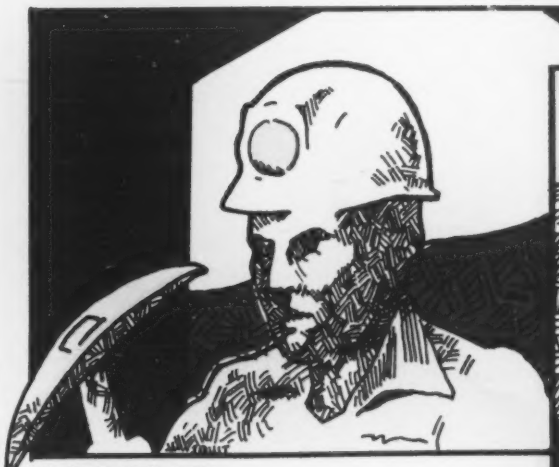
VOL. XIX NO.3

## 3rd QUARTER 1987 DATA

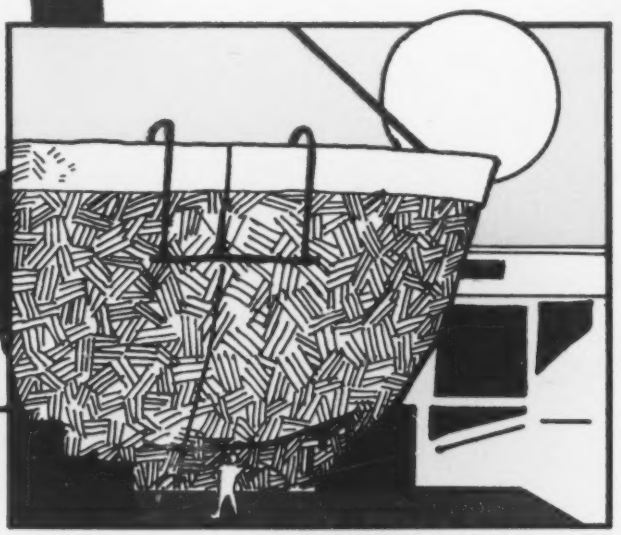


AGRICULTURE

RETAIL SALES



MINING



SHIPBUILDING

Virginia Employment Commission

## FOREWORD

This publication is designed to depict the movement of Virginia's key economic indicators in graphic and tabular form with accompanying narrative analysis.

We welcome any comments, suggestions, or questions concerning Virginia Economic Indicators. Please contact Dewey T. Oakley, Director, Economic Information Services Division, P. O. Box 1358, Richmond, Virginia 23211, telephone (804) 786-7496, for additional information or explanation of the contents of this document.

TABLE OF CONTENTS


| | Page |
|---|---|
| FOREWORD | iii |
| ECONOMIC OUTLOOK - U. S AND VIRGINIA | vii |
| HIGHLIGHTS VIRGINIA ECONOMIC INDICATORS, THIRD QUARTER 1987 | viii |
| VIRGINIA ECONOMIC INDICATORS, THIRD QUARTER DATA | 1 |
| EMPLOYMENT AND UNEMPLOYMENT INDICATORS, JANUARY 1986 TO SEPTEMBER 1987 | 2 |
| Nonagricultural Wage & Salary Employment | |
| Manufacturing Employment | |
| Total Unemployment Rate | |
| Average Weekly Initial Claims | |
| Average Weekly Insured Unemployment Rate | |
| U. I. Final Payments | |
| MANUFACTURING PRODUCTION WORKER INDICATORS, JANUARY 1986 TO SEPTEMBER 1987 | 4 |
| Average Weekly Hours | |
| Average Manhours | |
| Average Hourly Earnings | |
| Average Weekly Earnings | |
| BUSINESS INDICATORS, JANUARY 1986 TO SEPTEMBER 1987 | 6 |
| New Business Incorporations | |
| Valuation of Building Permits | |
| New Vehicle Registrations | |
| Electrical Power Sales | |
| Taxable Retail Sales | |
| DATA SUMMARY, SEPTEMBER 1987 | 8 |
| SUMMARY: MOVEMENT OF INDICATORS, JANUARY 1986 TO SEPTEMBER 1987 | 8 |
| DATA SUMMARY, JULY AND AUGUST 1987 | 9 |
| THE VIRGINIA LEADING AND COINCIDENT INDEXES | 10 |
| SOUTHWEST VIRGINIA - A HISTORICAL ANALYSIS AND OUTLOOK | 12 |
| Table 1: Projected Average Yearly Percentage Growth in Virginia Mining and Manufacturing Employment | 16 |
| Table 2: By Area Population, Industry, Per Capita Income, Unemployment, and Participation Rate | 17 |
| HISTORICAL SUMMARY, PERFORMANCE OF INDICATORS OVER THE BUSINESS CYCLE | 19 |

## ECONOMIC OUTLOOK - U. S.

1988, 1989, and 1990 U. S. Forecast Highlights

- Limited growth in the waning months of CY 1987 should produce a modest 2.6 expansion in Gross National Product (GNP) for the year.
  - Fourth quarter car sales are weak following a spurt in third quarter sales as manufacturers use incentives to clean up a large stock of leftover 1987s. Other industries also are making inventory corrections.
  - Recent big ticket purchases, low wage growth, low savings, high debt levels, rising interest rates, and news of stock market problems put something of a damper on consumer spending, and some holiday sales are not quite up to par.
  - A declining dollar continues to make U. S. made goods more competitive in both domestic and foreign markets. This is the really bright spot in the economy.
- CY 1988 brings an acceleration in real GNP to 2.8 percent, but CY 1988 growth also brings with it a little more inflation.
  - Net exports continue to provide a strong stimulus to the economy.
  - Greater capacity utilization and improved earnings cause business to dust off capital expansion programs which give further thrust to the economy.
  - The employment picture nationally is the brightest in almost a decade.
  - The strong job market plus the last round of personal tax reductions bring consumers back into the marketplace.
  - The prosperity is not without a price. Inflation should inch up to 4.5 percent.
- The first half of CY 1989 also should be very strong. After mid-year, the build-up of excesses in the prosperous First Quarter 1988 - Second Quarter 1989 period--such as inflation, higher interest rates, and deficit spending--will slow the economy, bringing on a growth recession.
  - This should be a 1950s-1960s style slowing of the economy, the first MILD slowdown of this type since 1969-1970.
  - The unemployment rate nationally during the slowdown period will not rise above 7.0 percent, still lower than in seven of the last ten years.
- The correction period will last about four quarters. By mid-1990, the U. S. economy with a mature, experienced labor force should be embarking on a recovery period lasting well into the mid-1990s.
- Oil prices should remain stable, in the $18 to $20 a barrel range throughout the forecast period.
- The dollar decline will continue throughout CY 1988 and much of CY 1989, creating a better market for U. S. made goods and giving a real boost to the economy.
- Both monetary and fiscal policy will become more restrictive. A tax increase seems necessary to control the deficit, and may even appear before the 1988 presidential election.

## ECONOMIC OUTLOOK - VIRGINIA

1988, 1989, and 1990 Virginia Forecast Highlights

- A strong economy is forecast for Virginia for CY 1988 and much of CY 1989. CY 1990 should see a brief levelling-off period before growth resumes for the early 1990s.
- As good as the Virginia employment situation was in CY 1987, conditions promise to be even better in CY 1988 as the national economy picks up, shipbuilding dislocations are put behind us, and further manufacturing gains stem from the weaker U. S. Dollar.
- The State's average unemployment rate should fall as low as 4.3 percent in CY 1988, rivalling the low jobless rates of the prosperous early 1970s.
- In CY 1988 and CY 1989 labor shortages are likely to be more evident in some of the State's larger metropolitan areas and their suburbs.
- Statewide unemployment in CY 1989 is forecast to be only marginally higher at 4.4 percent.
- A mild recession expected for late CY 1989 and early CY 1990 will push the Statewide jobless rate to a 5.1 percent average in CY 1990 and cause temporarily higher unemployment in some manufacturing centers of the Valley and Southside Regions.
- Unemployment Statewide should fall again to the low 4.0 range by the early 1990s.

William F. Mezger and Ann D. Lang

HIGHLIGHTS
VIRGINIA ECONOMIC INDICATORS
Third Quarter 1987

- During Third Quarter 1987, seven of the Virginia economic indicator series set all-time records on a seasonally adjusted basis.
  - Nonagricultural wage and salary employment attained new highs throughout the quarter, reaching an impressive level of 2,634,400 jobs in September, 62,400 jobs or 2.4 percent greater than one year earlier.
  - The average workweek at the State's manufacturing facilities stretched to 41.5 hours in September, the longest in the post-war period, indicating a high level of factory back orders.
  - Because of the high level of factory production, average manhours in manufacturing rose to a record September level of 13,328,600.
  - Hourly earnings averaged a record $9.25 in September.
  - The weekly wage of production workers reached a high of $383.89 in September.
  - Optimism over the State's economy caused a record 1,690 new businesses to be incorporated in Virginia in September.
  - Hot weather plus record factory output caused electric power sales to break records in the third quarter, soaring to 3,941.7 million kilowatt hours in July and 4,071.8 million kilowatt hours in August.
- Virginia's seasonally adjusted unemployment rate fell to 4.2 percent in July, the lowest level recorded in over 13 years, since a 4.1 percent rate in May 1974.
- The average weekly insured unemployment rate fell to 0.8 percent, seasonally adjusted in July. This was the lowest insured level recorded in Virginia since January 1974.
- During Third Quarter 1987, three industrial divisions set all-time employment records.
  - In July construction employment surged to 183,200 jobs, the highest level ever.
  - The peak of the summer travel season pushed transportation and public utilities employment to a high of 142,700 jobs in August.
  - The rapidly growing finance, insurance, and real estate sector reached a peak 140,800 jobs in July.
- Gross state product in Virginia rose 4.0 percent to $87.0 billion in 1986, up from $83.7 billion in 1985.
- Virginia factories have operated at 82 percent of operating capacity on the average so far during 1987.
- The U. S. Bureau of Labor Statistics reported that productivity as measured by output per employee hour increased in 1986 in more than three-fourths of the 88 industries for which current data is presently available. In 1985, productivity posted gains in less than two-thirds of the industries. A number of important manufacturing industries posted large gains in productivity in 1986, including petroleum refining (12.0 percent), sawmills (11.0 percent), synthetic fibers (9.1 percent), paper (7.1 percent), and major household appliances (6.7 percent). All of these industries also recorded output growth in 1986.
- According to the U. S. Bureau of Labor Statistics, productivity increased at a 4.0 percent annual rate during Third Quarter 1987 in the business sector. Output rose 5.4 percent and hours of all persons engaged in the sector increased 1.4 percent (seasonally adjusted annual rates). The increases in productivity and output were the largest since First Quarter 1986. During Second Quarter 1987, productivity rose 1.4 percent as output increased 3.0 percent and hours of all persons in the sector increased 1.6 percent.
- Total U. S. housing starts increased to a seasonally adjusted rate of 1.65 million units in September, while the effective mortgage rate (FHLBB Composite) declined to 9.29 percent from the 9.4 percent August rate.
- The CPI for All Urban Consumers (CPI-U) averaged 342.6 (1967 = 100) in Third Quarter 1987. This was 1.1 percent higher than the 338.8 average of Second Quarter 1987. In 1986, the CPI, still feeling the effects of reduced energy prices, rose only 0.7 percent between second and third quarter. Over the year, prices in Third Quarter 1987 averaged 4.2 percent higher than in Third Quarter 1986.
- Coal production in Virginia was still below the 1986 level. For the first nine months of 1987, coal production at 30,890,000 short tons was 2.4 percent below the 31,640,000 short tons mined in the similar 1986 period. Although at the lowest level in 16 years, Virginia mine employment seemed to have stabilized at 15,600 in Third Quarter 1987.

VIRGINIA ECONOMIC INDICATORS

VOL. XIX, NO. 3 THIRD QUARTER DATA

## Overall Level of Performance High in Spite of Slightly Negative Stances in August and September

Third quarter saw much the same pattern that has been evident in the indicators all year. Overall, the indicators are at very, very high levels by all past standards, but many of the individual series are not able to attain new highs every month. After fairly strong performances in June and July (nine series up and six down in both months), the composite performance turned negative in August with eight series down, two unchanged, and five up. By September, there was slight improvement with seven series up and eight down. In most all cases, the monthly negative variances from recently set records were small and seemed to be caused largely by overcompensation by the seasonal adjustment factors; therefore, they should be of little significance in the overall economic picture. This sustained high level of performance without overheating may be just what is needed to keep the five-year old recovery going into 1988.

In spite of August's and September's overall slightly negative performance, third quarter still saw seven series set new all-time highs--an impressive number of recordbreakers for any three-month period. In addition to the seven third quarter record setters, the total unemployment rate fell to 4.2 percent in July, the lowest level in over 13 years. Third quarter recordbreakers occurred as follows: nonfarm employment each month of the quarter; electric power sales in July and August; and average weekly hours, average manhours worked, average hourly earnings, average weekly earnings, and new business incorporations in September.

The six-month moving average of the number of rising indicators (page 8) serves to illustrate the third quarter's performance. The moving average enhances analysis because it smooths out much of the irregularity present in many of the individual series.

## Seven All-Time Highs Set in Third Quarter, Five of Them in September

Nonagricultural wage and salary employment continued to be a good performer, reaching new record highs each month of the quarter (although the July to August increment of only 500 shows up as no change on the page 9 Data Summary table). September's record was an impressive 2,634,400 jobs. Nonfarm employment was buoyed up by still very strong trade, service, transportation, construction, and finance sectors. Factory employment on a seasonally adjusted basis was very strong in July (426,000), then trailed off to last spring's level by September (423,500). On an unadjusted basis, this indicator continued to grow throughout the quarter. The timing of crop-related food and tobacco processing activities and perhaps the summer's dry weather seemed to be overly influencing the seasonal adjustment factors for this series.

The direction of the four unemployment-related indicators swung from all positive in July to all negative by September, but all four series were still at low levels in September and all were below June. On an unadjusted basis, these series continued to improve throughout the third quarter. Overly ambitious seasonal adjustment factors seemed to be responsible for August's and September's negative trends. July's 4.2 percent seasonally adjusted unemployment rate was at the lowest level recorded in Virginia since a 4.1 percent rate in May 1974, over 13 years ago.

The four production workers series were all negative in July, probably due to vacations and the large number of entry level summer workers hired this year, but had resumed a strong positive stance by the end of the quarter. In fact, all four series set all-time new highs in September. These records were: the length of workweek, 41.5 hours; average manhours in thousands, 13,328.6; average hourly earnings, $9.25; and average weekly earnings, $383.89.

The five business-related series were generally positive in July. All but electric power sales were slightly negative in August, and then the quarter ended with three of the five series still negative in September. New business incorporations, after rising in July and being off in August, reached an all-time record of 1,690 in September. The volatile valuation of building permits series continued to slide throughout the quarter from June's very high level of $207.7 million to $166.3 million in September. With fewer financing and tax incentives to clean up leftover cars this year, new vehicle registrations slipped a little each month of the third quarter but were still running at a healthy level of over 40,000 new vehicles per month. A very hot summer pushed electric power sales to new highs in both July (3,941.7 million kilowatt hours) and August (4,071.8 million kilowatt hours). Cooler temperatures brought a retrenchment by September. Taxable retail sales were off in both July and August before back-to-school promotions boosted the September level to a strong $3,748.5 million, second only to February 1987.

William F. Mezger

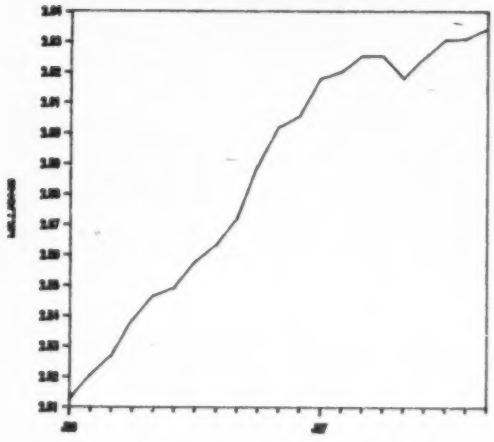
EMPLOYMENT AND UNEMPLOYMENT INDICATORS
January 1986 to September 1987

| | Nonagricultural Wage & Salary Emp.* (Thousands) | | Manufacturing Employment* (Thousands) | | Total Unemployment Rate* (Percent) | |
|---|---|---|---|---|---|---|
| 1986 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 2,469.9 | 2,512.6 | 421.2 | 425.5 | 5.6 | 5.0 |
| February | 2,470.2 | 2,520.6 | 422.5 | 425.9 | 5.6 | 5.0 |
| March | 2,494.0 | 2,526.8 | 422.3 | 424.4 | 5.4 | 5.1 |
| April | 2,528.4 | 2,538.6 | 422.8 | 424.5 | 5.1 | 5.2 |
| May | 2,559.3 | 2,546.6 | 422.3 | 424.0 | 4.9 | 5.1 |
| June | 2,585.0 | 2,549.3 | 423.3 | 422.5 | 5.2 | 5.3 |
| July | 2,565.5 | 2,557.8 | 422.2 | 423.5 | 5.1 | 5.0 |
| August | 2,568.5 | 2,563.4 | 425.3 | 423.6 | 4.7 | 5.0 |
| September | 2,590.0 | 2,572.0 | 427.3 | 423.1 | 4.6 | 5.1 |
| October | 2,607.5 | 2,589.4 | 427.8 | 424.8 | 4.6 | 4.9 |
| November | 2,620.2 | 2,602.0 | 428.1 | 425.1 | 4.7 | 4.8 |
| December | 2,626.5 | 2,605.7 | 425.3 | 424.5 | 4.7 | 4.7 |
| 1987 | | | | | | |
| January | 2,573.6 | 2,618.1 | 423.2 | 427.0 | 5.4 | 4.8 |
| February | 2,568.0 | 2,620.4 | 422.7 | 426.1 | 5.5 | 5.0 |
| March | 2,591.3 | 2,625.4 | 422.6 | 424.7 | 5.2 | 4.9 |
| April | 2,615.0 | 2,625.5 | 422.2 | 423.9 | 4.7 | 4.8 |
| May | 2,631.4 | 2,618.3 | 422.0 | 423.7 | 4.7 | 4.9 |
| June | 2,656.6 | 2,625.1 | 425.3 | 424.5 | 4.6 | 4.7 |
| July | 2,638.8 | 2,630.9 | 424.7 | 426.0 | 4.3 | 4.2 |
| August | 2,634.0 | 2,631.4 | 426.1 | 424.4 | 4.1 | 4.4 |
| September | 2,652.8 | 2,634.4 | 427.3 | 423.5 | 4.1 | 4.6 |

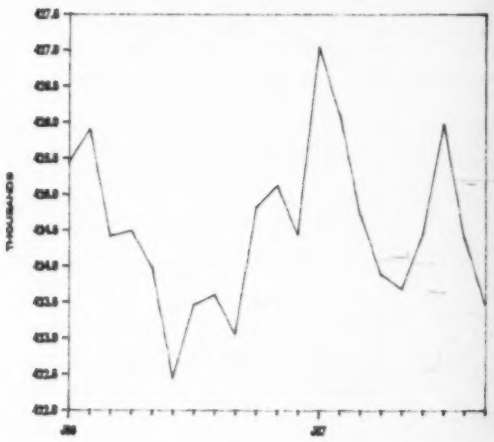
| | Average Weekly Initial Claims (Number) | | Avg. Wkly. Insured Unemployment Rate (Percent) | | U. I. Final Payments (Number) | |
|---|---|---|---|---|---|---|
| 1986 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 8,597 | 5,427 | 1.6 | 1.1 | 2,439 | 2,401 |
| February | 6,258 | 5,778 | 1.4 | 1.0 | 1,888 | 2,009 |
| March | 5,133 | 5,634 | 1.3 | 1.0 | 2,276 | 1,969 |
| April | 6,049 | 6,812 | 1.1 | 1.1 | 3,089 | 2,194 |
| May | 4,273 | 5,985 | 0.9 | 1.1 | 2,292 | 1,698 |
| June | 5,266 | 6,284 | 0.9 | 1.1 | 2,186 | 2,213 |
| July | 6,117 | 6,117 | 1.0 | 1.1 | 2,244 | 2,141 |
| August | 4,323 | 6,247 | 0.9 | 1.1 | 1,739 | 1,941 |
| September | 3,974 | 6,190 | 0.8 | 1.1 | 1,763 | 2,299 |
| October | 4,366 | 5,478 | 0.8 | 1.0 | 1,504 | 1,923 |
| November | 4,930 | 5,162 | 0.9 | 1.0 | 1,319 | 1,809 |
| December | 11,709 | 6,143 | 1.2 | 1.1 | 2,007 | 2,205 |
| 1987 | | | | | | |
| January | 9,593 | 6,064 | 1.3 | 0.9 | 1,970 | 1,928 |
| February | 7,054 | 6,484 | 1.3 | 1.0 | 1,849 | 1,963 |
| March | 4,828 | 5,323 | 1.1 | 0.9 | 2,327 | 2,027 |
| April | 4,484 | 5,055 | 0.9 | 0.9 | 2,661 | 1,882 |
| May | 3,519 | 4,963 | 0.8 | 0.9 | 1,917 | 1,404 |
| June | 4,810 | 5,733 | 0.9 | 1.1 | 2,268 | 2,319 |
| July | 5,192 | 5,161 | 0.7 | 0.8 | 1,834 | 1,743 |
| August | 3,530 | 5,123 | 0.7 | 0.9 | 1,639 | 1,833 |
| September | 3,478 | 5,443 | 0.7 | 1.0 | 1,454 | 1,901 |

*These series have been adjusted to First Quarter 1986 benchmarks.

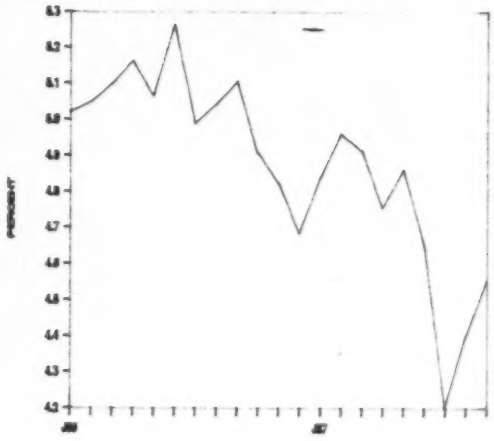
NONAG W & S EMPLOYMENT



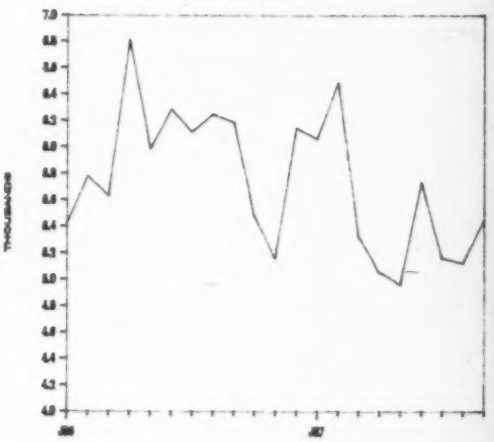
MANUFACTURING EMPLOYMENT



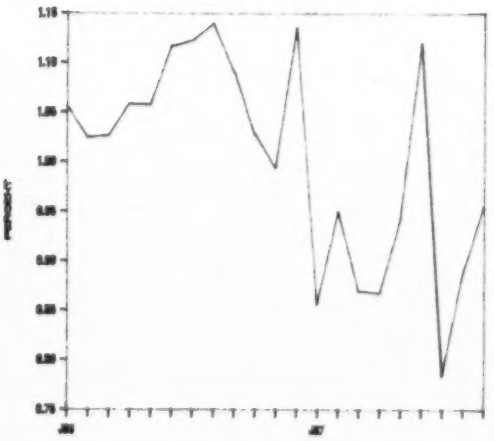
TOTAL UNEMPLOYMENT RATE



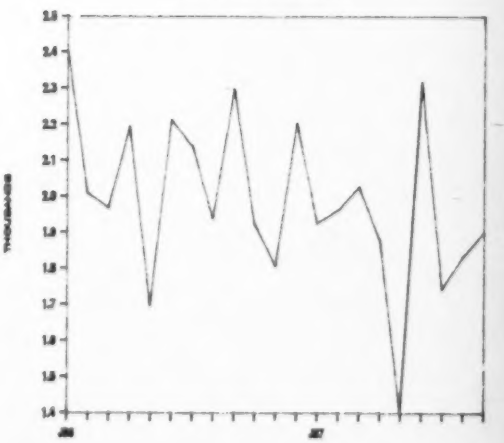
AVG. WEEKLY INITIAL CLAIMS



INSURED UNEMPLOYMENT RATE



U.I. FINAL PAYMENTS



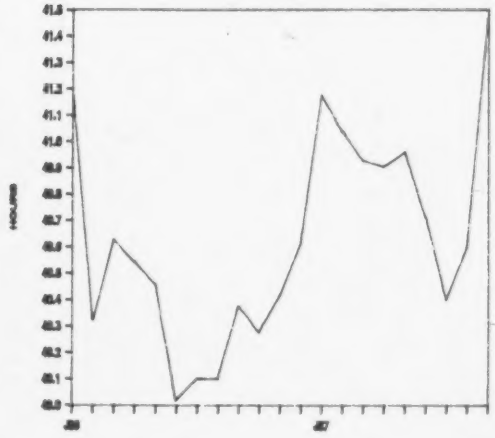
MANUFACTURING PRODUCTION WORKER INDICATORS
January 1986 to September 1987

| | Average Weekly Hours* (Hours) | | Average Manhours* (Thousands) | |
|---|---|---|---|---|
| 1986 | Unadj. | Adj. | Unadj. | Adj. |
| January | 40.6 | 41.2 | 12,867.4 | 13,130.0 |
| February | 39.6 | 40.3 | 12,604.7 | 12,901.4 |
| March | 40.3 | 40.6 | 12,753.6 | 12,947.8 |
| April | 40.3 | 40.5 | 12,780.8 | 12,936.0 |
| May | 40.5 | 40.5 | 12,824.6 | 12,889.0 |
| June | 40.3 | 40.0 | 12,786.4 | 12,634.8 |
| July | 39.9 | 40.1 | 12,644.2 | 12,746.2 |
| August | 40.1 | 40.1 | 12,836.3 | 12,823.5 |
| September | 40.7 | 40.4 | 13,093.3 | 12,861.8 |
| October | 40.4 | 40.3 | 13,025.7 | 12,896.7 |
| November | 40.9 | 40.4 | 13,219.5 | 12,973.0 |
| December | 41.3 | 40.6 | 13,269.8 | 13,022.4 |
| 1987 | | | | |
| January | 40.6 | 41.2 | 12,987.9 | 13,239.4 |
| February | 40.3 | 41.0 | 12,879.9 | 13,183.1 |
| March | 40.6 | 40.9 | 12,959.5 | 13,156.9 |
| April | 40.7 | 40.9 | 12,935.4 | 13,079.3 |
| May | 41.0 | 41.0 | 13,076.9 | 13,142.1 |
| June | 41.0 | 40.7 | 13,206.4 | 13,049.8 |
| July | 40.2 | 40.4 | 12,927.2 | 13,031.5 |
| August | 40.6 | 40.6 | 13,102.7 | 13,089.6 |
| September | 41.8 | 41.5 | 13,568.5 | 13,328.6 |

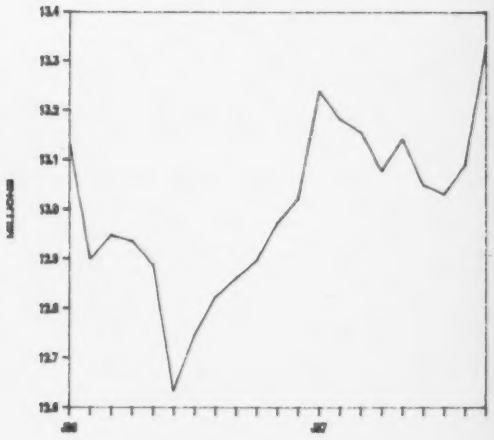
| | Average Hourly Earnings* (Dollars) | | Average Weekly Earnings* (Dollars) | |
|---|---|---|---|---|
| 1986 | Unadj. | Adj. | Unadj. | Adj. |
| January | 8.68 | 8.62 | 352.41 | 355.25 |
| February | 8.73 | 8.70 | 345.71 | 350.97 |
| March | 8.72 | 8.71 | 351.42 | 354.25 |
| April | 8.75 | 8.76 | 352.63 | 354.05 |
| May | 8.81 | 8.83 | 356.81 | 357.53 |
| June | 8.81 | 8.84 | 355.04 | 353.63 |
| July | 8.88 | 8.90 | 354.31 | 356.81 |
| August | 8.87 | 8.91 | 355.69 | 356.76 |
| September | 8.93 | 8.95 | 363.45 | 361.28 |
| October | 8.91 | 8.95 | 359.96 | 361.04 |
| November | 8.94 | 8.94 | 365.65 | 359.89 |
| December | 9.02 | 8.98 | 372.53 | 364.51 |
| 1987 | | | | |
| January | 9.06 | 9.00 | 367.84 | 370.81 |
| February | 9.07 | 9.04 | 365.52 | 371.09 |
| March | 9.13 | 9.11 | 370.68 | 373.67 |
| April | 9.09 | 9.10 | 369.96 | 371.45 |
| May | 8.99 | 9.01 | 368.59 | 369.33 |
| June | 9.04 | 9.07 | 370.64 | 369.16 |
| July | 8.93 | 8.95 | 358.99 | 361.52 |
| August | 8.91 | 8.95 | 361.75 | 362.84 |
| September | 9.23 | 9.25 | 385.81 | 383.89 |

*These series have been adjusted to First Quarter 1986 benchmarks.

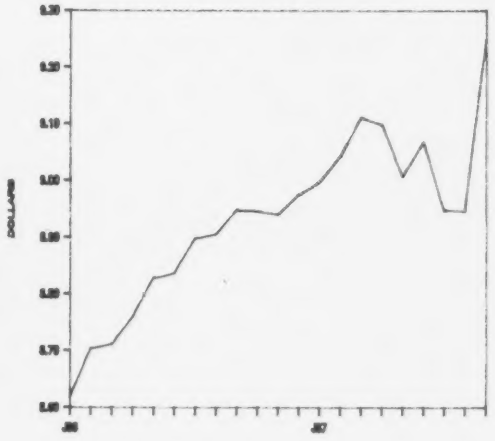
AVERAGE WEEKLY HOURS



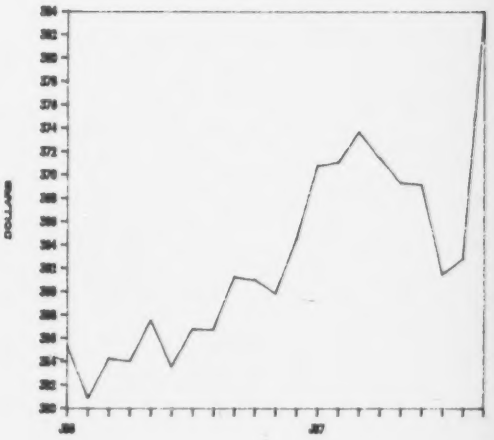

AVERAGE MANHOURS




AVERAGE HOURLY EARNINGS




AVERAGE WEEKLY EARNINGS

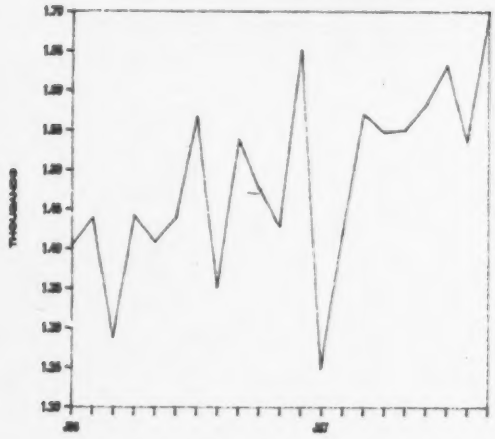


BUSINESS INDICATORS
January 1986 to September 1987

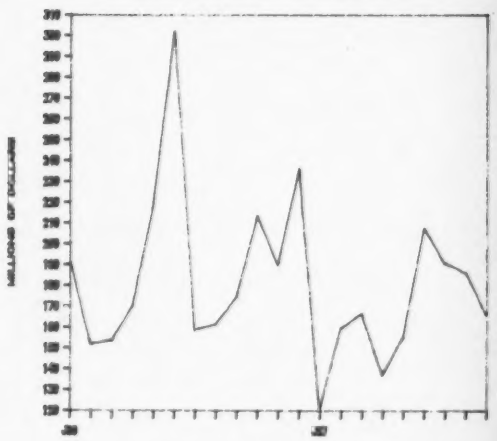
| | New Business Incorporations (Number) | | Valuation of Bldg. Permits ($ Millions) | | New Vehicle Registrations (Number) | |
|---|---|---|---|---|---|---|
| 1986 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 1,391 | 1,405 | 175.3 | 191.2 | 39,473 | 40,568 |
| February | 1,469 | 1,439 | 117.8 | 152.0 | 31,677 | 36,706 |
| March | 1,401 | 1,289 | 180.3 | 153.8 | 38,739 | 35,803 |
| April | 1,579 | 1,442 | 194.3 | 170.0 | 41,469 | 37,837 |
| May | 1,438 | 1,410 | 230.2 | 218.4 | 42,820 | 37,827 |
| June | 1,445 | 1,439 | 374.5 | 301.8 | 45,992 | 39,580 |
| July | 1,554 | 1,567 | 159.8 | 158.8 | 43,297 | 39,325 |
| August | 1,358 | 1,353 | 160.0 | 161.6 | 40,420 | 39,205 |
| September | 1,387 | 1,538 | 157.0 | 174.6 | 49,358 | 47,097 |
| October | 1,483 | 1,477 | 230.7 | 213.6 | 45,978 | 46,678 |
| November | 1,255 | 1,429 | 173.2 | 190.1 | 28,768 | 35,342 |
| December | 1,656 | 1,651 | 190.0 | 236.3 | 36,777 | 51,726 |
| 1987 | | | | | | |
| January | 1,237 | 1,249 | 111.8 | 120.3 | 41,798 | 42,958 |
| February | 1,453 | 1,419 | 123.4 | 159.6 | 28,975 | 33,575 |
| March | 1,707 | 1,570 | 195.0 | 166.7 | 41,798 | 38,810 |
| April | 1,694 | 1,548 | 157.4 | 137.3 | 43,113 | 39,445 |
| May | 1,582 | 1,551 | 165.1 | 155.3 | 39,956 | 35,204 |
| June | 1,584 | 1,582 | 258.0 | 207.7 | 47,997 | 41,412 |
| July | 1,624 | 1,632 | 190.1 | 190.9 | 46,707 | 42,345 |
| August | 1,541 | 1,536 | 185.2 | 186.1 | 41,958 | 40,776 |
| September | 1,519 | 1,690 | 148.5 | 166.3 | 42,661 | 40,591 |

| | Electrical Power Sales (Mil. of KWH) | | Taxable Retail Sales ($ Millions) | |
|---|---|---|---|---|
| 1986 | Unadj. | Adj. | Unadj. | Adj. |
| January | 4,062.3 | 3,436.8 | 2,144.1 | 2,425.5 |
| February | 3,851.7 | 3,476.3 | 2,942.0 | 3,428.9 |
| March | 3,654.2 | 3,593.1 | 2,958.5 | 3,127.4 |
| April | 3,083.0 | 3,362.1 | 2,826.4 | 2,913.8 |
| May | 2,918.1 | 3,465.7 | 3,482.3 | 3,221.4 |
| June | 3,460.5 | 3,600.9 | 3,161.5 | 3,171.0 |
| July | 4,065.7 | 3,782.0 | 2,993.0 | 3,029.4 |
| August | 4,078.7 | 3,677.8 | 3,291.6 | 3,275.2 |
| September | 3,386.8 | 3,222.5 | 3,028.5 | 3,096.6 |
| October | 3,286.4 | 3,755.9 | 3,787.4 | 2,711.5 |
| November | 3,198.7 | 3,693.6 | 3,349.7 | 3,268.0 |
| December | 3,688.6 | 3,710.9 | 3,582.1 | 2,891.1 |
| 1987 | | | | |
| January | 4,142.9 | 3,510.9 | 2,388.1 | 2,704.5 |
| February | 4,221.3 | 3,809.8 | 3,569.4 | 4,169.9 |
| March | 3,879.1 | 3,810.5 | 2,985.7 | 3,152.8 |
| April | 3,381.9 | 3,692.0 | 3,109.4 | 3,208.9 |
| May | 3,177.8 | 3,769.6 | 3,472.1 | 3,209.0 |
| June | 3,756.6 | 3,900.9 | 3,579.4 | 3,590.2 |
| July | 4,237.3 | 3,941.7 | 3,352.7 | 3,403.8 |
| August | 4,511.6 | 4,071.8 | 3,082.5 | 3,061.1 |
| September | 3,972.2 | 3,779.4 | 3,658.5 | 3,748.5 |

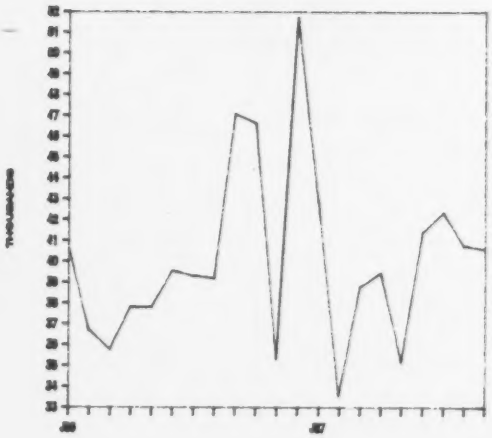
NEW BUSINESS INCORPORATIONS



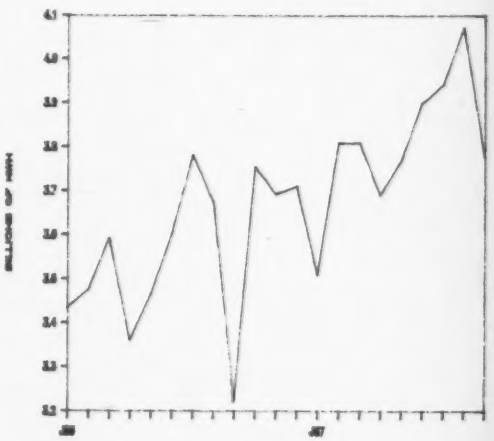
VALUATION OF BUILDING PERMITS



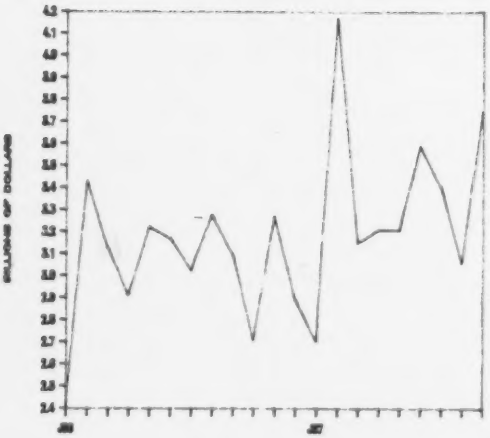
NEW VEHICLE REGISTRATIONS



ELECTRICAL POWER SALES



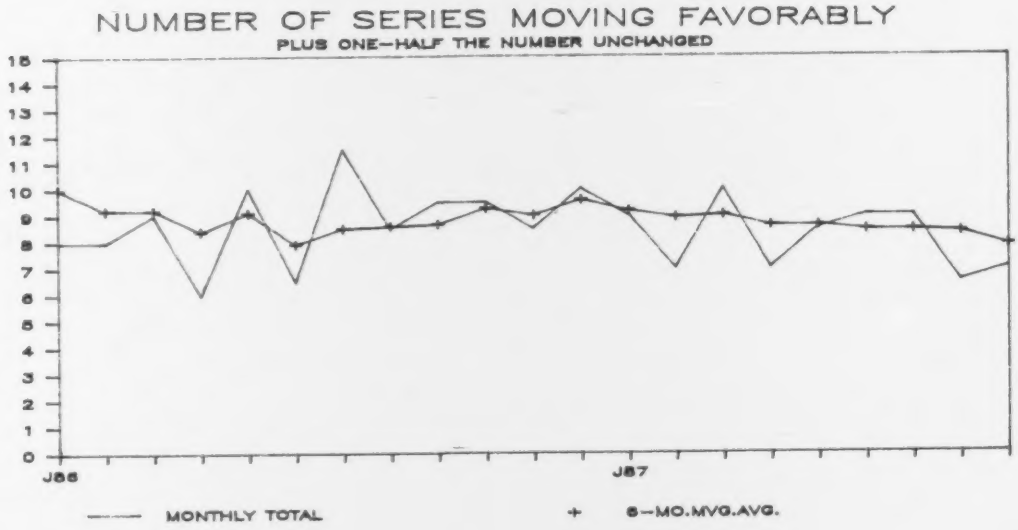
TAXABLE RETAIL SALES



| DATA SUMMARY<br>SEPTEMBER 1987<br>(SEASONALLY ADJUSTED DATA) | Sept. 1987 | Aug. 1987 | Sept. 1986 | Percent & (Direction) of Change 1/<br>Aug. '87-<br>Sept. '87 | <br>Sept. '86-<br>Sept. '87 |
|---|---|---|---|---|---|
| EMPLOYMENT | | | | | |
| *Nonagricultural Wage & Salary Employment (000) | 2,634.4 | 2,631.4 | 2,572.0 | 0.1 (+) | 2.4 (+) |
| *Manufacturing Employment (000) | 423.5 | 424.4 | 423.1 | - 0.2 (-) | 0.1 (+) |
| UNEMPLOYMENT | | | | | |
| *Total Unemployment Rate (%) | 4.6 | 4.4 | 5.1 | xxx (-) | xxx (+) |
| Average Weekly Initial Claims | 5,443 | 5,123 | 6,190 | 6.2 (-) | -12.1 (+) |
| Average Weekly Insured Unemployment Rate (%) | 1.0 | 0.9 | 1.1 | xxx (-) | xxx (+) |
| Unemployment Insurance Final Payments | 1,901 | 1,833 | 2,299 | 3.7 (-) | -17.3 (+) |
| MANUFACTURING PRODUCTION WORKERS | | | | | |
| *Average Weekly Hours | 41.5 | 40.6 | 40.4 | 2.2 (+) | 2.7 (+) |
| *Average Manhours (000) | 13,328.6 | 13,089.6 | 12,861.8 | 1.8 (+) | 3.6 (+) |
| *Average Hourly Earnings ($) | 9.25 | 8.95 | 8.95 | 3.4 (+) | 3.4 (+) |
| *Average Weekly Earnings ($) | 383.89 | 362.84 | 361.28 | 5.8 (+) | 6.3 (+) |
| BUSINESS | | | | | |
| New Business Incorporations | 1,690 | 1,536 | 1,538 | 10.0 (+) | 9.9 (+) |
| Valuation of Building Permits -18 Cities ($M) | 166.3 | 186.1 | 174.6 | -10.6 (-) | - 4.8 (-) |
| New Vehicle Registrations | 40,591 | 40,776 | 47,097 | - 0.5 (-) | -13.8 (-) |
| Electrical Power Sales (M of KWH) | 3,779.4 | 4,071.8 | 3,222.5 | - 7.2 (-) | 17.3 (+) |
| Taxable Retail Sales ($M) | 3,748.5 | 3,061.1 | 3,096.6 | 22.5 (+) | 21.1 (+) |

1/ + = Favorable, - = Not Favorable, 0 = No Change (less than .05%)
* Revised to First Quarter 1986 benchmarks

SUMMARY



| DATA SUMMARY<br>AUGUST 1987<br>(SEASONALLY ADJUSTED DATA) | Aug. 1987 | July 1987 | Aug. 1986 | Percent & (Direction) of Change 1/<br>July '87-<br>Aug. '87 | <br>Aug. '86-<br>Aug. '87 |
|---|---|---|---|---|---|
| EMPLOYMENT | | | | | |
| *Nonagricultural Wage & Salary Employment (000) | 2,631.4 | 2,630.9 | 2,563.4 | 0.0 (0) | 2.7 (+) |
| *Manufacturing Employment (000) | 424.4 | 426.0 | 423.6 | - 0.4 (-) | 0.2 (+) |
| UNEMPLOYMENT | | | | | |
| *Total Unemployment Rate (%) | 4.4 | 4.2 | 5.0 | xxx (-) | xxx (+) |
| Average Weekly Initial Claims | 5,123 | 5,161 | 6,247 | - 0.7 (+) | -18.0 (+) |
| Average Weekly Insured Unemployment Rate (%) | 0.9 | 0.8 | 1.1 | xxx (-) | xxx (+) |
| Unemployment Insurance Final Payments | 1,833 | 1,743 | 1,941 | 5.2 (-) | - 5.6 (+) |
| MANUFACTURING PRODUCTION WORKERS | | | | | |
| *Average Weekly Hours | 40.6 | 40.4 | 40.1 | 0.5 (+) | 1.2 (+) |
| *Average Manhours (000) | 13,089.6 | 13,031.5 | 12,823.5 | 0.4 (+) | 2.1 (+) |
| *Average Hourly Earnings ($) | 8.95 | 8.95 | 8.91 | 0.0 (0) | 0.4 (+) |
| *Average Weekly Earnings ($) | 362.84 | 361.52 | 356.76 | 0.4 (+) | 1.7 (+) |
| BUSINESS | | | | | |
| New Business Incorporations | 1,536 | 1,632 | 1,353 | - 5.9 (-) | 13.5 (+) |
| Valuation of Building Permits -18 Cities ($M) | 186.1 | 190.9 | 161.6 | - 2.5 (-) | 15.2 (+) |
| New Vehicle Registrations | 40,776 | 42,345 | 39,205 | - 3.7 (-) | 4.0 (+) |
| Electrical Power Sales (M of KWH) | 4,071.8 | 3,941.7 | 3,677.8 | 3.3 (+) | 10.7 (+) |
| Taxable Retail Sales ($M) | 3,061.1 | 3,403.8 | 3,275.2 | -10.1 (-) | - 6.5 (-) |

| DATA SUMMARY<br>JULY 1987<br>(SEASONALLY ADJUSTED DATA) | July 1987 | June 1987 | July 1986 | Percent & (Direction) of Change 1/<br>June '87-<br>July '87 | <br>July '86-<br>July '87 |
|---|---|---|---|---|---|
| EMPLOYMENT | | | | | |
| *Nonagricultural Wage & Salary Employment (000) | 2,630.9 | 2,625.1 | 2,557.8 | 0.2 (+) | 2.9 (+) |
| *Manufacturing Employment (000) | 426.0 | 424.5 | 423.5 | 0.4 (+) | 0.6 (+) |
| UNEMPLOYMENT | | | | | |
| *Total Unemployment Rate (%) | 4.2 | 4.7 | 5.0 | xxx (+) | xxx (+) |
| Average Weekly Initial Claims | 5,161 | 5,733 | 6,117 | -10.0 (+) | -15.6 (+) |
| Average Weekly Insured Unemployment Rate (%) | 0.8 | 1.1 | 1.1 | xxx (+) | xxx (+) |
| Unemployment Insurance Final Payments | 1,743 | 2,319 | 2,141 | -24.8 (+) | -18.6 (+) |
| MANUFACTURING PRODUCTION WORKERS | | | | | |
| *Average Weekly Hours | 40.4 | 40.7 | 40.1 | - 0.7 (-) | 0.7 (+) |
| *Average Manhours (000) | 13,031.5 | 13,049.8 | 12,746.2 | - 0.1 (-) | 2.2 (+) |
| *Average Hourly Earnings ($) | 8.95 | 9.07 | 8.90 | - 1.3 (-) | 0.6 (+) |
| *Average Weekly Earnings ($) | 361.52 | 369.16 | 356.81 | - 2.1 (-) | 1.3 (+) |
| BUSINESS | | | | | |
| New Business Incorporations | 1,632 | 1,582 | 1,567 | 3.2 (+) | 4.1 (+) |
| Valuation of Building Permits -18 Cities ($M) | 190.9 | 207.7 | 158.8 | - 8.1 (-) | 20.2 (+) |
| New Vehicle Registrations | 42,345 | 41,412 | 39,325 | 2.3 (+) | 7.7 (+) |
| Electrical Power Sales (M of KWH) | 3,941.7 | 3,900.9 | 3,782.0 | 1.0 (+) | 4.2 (+) |
| Taxable Retail Sales ($M) | 3,403.8 | 3,590.2 | 3,029.4 | - 5.2 (-) | 12.4 (+) |

1/ + = Favorable, - = Not Favorable, 0 = No Change (less than .05%)
* Revised to First Quarter 1986 benchmarks

## THE VIRGINIA LEADING AND COINCIDENT INDEXES

| 1986 | Leading Index (1977=100) | Monthly Percent Change | Quarterly Percent Change | Coincident Index (1977=100) | Monthly Percent Change | Quarterly Percent Change |
|---|---|---|---|---|---|---|
| January | 153.0 | +1.5 | - | 131.5 | -0.9 | - |
| February | 153.6 | +0.4 | +3.5 | 132.2 | +0.5 | +0.2 |
| March | 154.2 | +0.4 | - | 133.6 | +1.0 | - |
| April | 153.6 | -0.4 | - | 134.0 | +0.3 | - |
| May | 154.6 | +0.7 | +0.3 | 135.3 | +1.0 | +2.2 |
| June | 154.2 | -0.3 | - | 136.6 | +1.0 | - |
| July | 154.8 | +0.4 | - | 138.3 | +1.2 | - |
| August | 154.5 | -0.2 | +0.7 | 138.3 | +0.1 | +2.2 |
| September | 155.9 | +0.9 | - | 138.4 | +0.1 | - |
| October | 157.1 | +0.8 | - | 138.9 | +0.4 | - |
| November | 158.0 | +0.5 | +2.0 | 139.7 | +0.6 | +0.4 |
| December | 159.4 | +0.9 | - | 139.0 | -0.5 | - |
| 1987 | | | | | | |
| January | 158.5 | -0.5 | - | 138.6 | -0.3 | - |
| February | 158.9 | +0.2 | +0.6 | 140.1 | +1.0 | +0.8 |
| March | 160.0 | +0.7 | - | 140.2 | +0.1 | - |
| April | 160.7 | +0.4 | - | 140.8 | +0.4 | - |
| May | 162.3 | +1.0 | +1.6 | 139.8 | -0.7 | +0.8 |
| June | 161.7 | -0.4 | - | 141.6 | +1.3 | - |
| July | 163.7 | +1.2 | - | 143.4 | +1.2 | - |
| August | 164.4 | +0.4 | +1.9 | 140.9 | -1.7 | +1.0 |
| September | 165.7 | +0.8 | - | 142.1 | +0.9 | - |

Leading Index Components: Average Weekly Hours for Production Workers, 5-month moving average; New Businesses, 6-month moving average; Building Permits, deflated to 1982 dollars, 6-month moving average; Average Weekly Initial Claims, 3-month moving average.

Coincident Index Components: Personal Income less Transfer Payments, deflated to 1982 dollars; Industrial Production Index; Nonagricultural Wage and Salary Employment; Taxable Retail Sales, deflated to 1967 dollars by the consumer price index, 6-month moving average.

Note: All components are seasonally adjusted.

Sources: Personal Income, U. S. Department of Commerce, Wharton Econometrics (most recent quarter); Industrial Production Index, Wharton Econometrics.

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The Virginia leading and coincident indexes showed improved performance during the Third Quarter 1987 over the previous quarter. The pre-stock market crash quarter showed the leading index up by 1.9 percent and the coincident index ahead by 1.0 percent. As was the case during the second quarter, the State leading index outperformed its national counterpart, which advanced by 1.6 percent. The State coincident index's change was identical to the national index's.

The leading index drew strength from various components during the quarter. New businesses and building permits were especially strong during July and August while average weeks claimed and average hours worked by production workers gave impetus in September. Among the coincident index components, personal income less transfer payments and the industrial production index showed consistent gains. A lull in nonagricultural wage and salary employment growth and an unexplained decline in taxable retail sales in August caused the only decline in the index during the quarter.

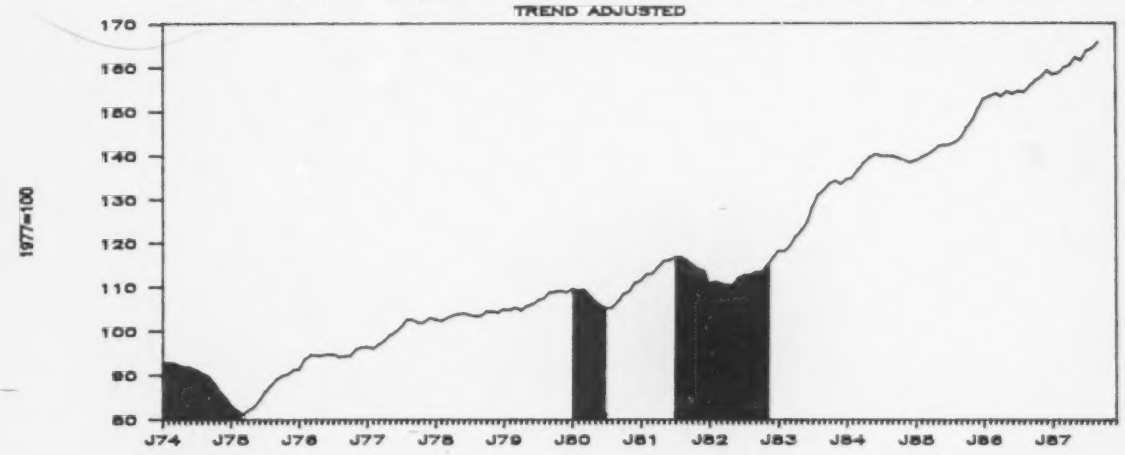
Below are estimates of state personal income through Third Quarter 1987.

| 1986 | Total Personal Income Millions | Transfer Payments Millions | Real Personal Income (82$) Millions | Transfer Payments (82$) Millions |
|---|---|---|---|---|
| 1st Qtr | $87,156 | $11,632 | $76,650 | $10,230 |
| 2nd Qtr | 88,321 | 11,732 | 77,880 | 10,350 |
| 3rd Qtr | 89,624 | 11,909 | 78,341 | 10,410 |
| 4th Qtr | 91,067 | 11,966 | 78,981 | 10,380 |
| 1987 | | | | |
| 1st Qtr | 92,749 | 12,160 | 79,403 | 10,417 |
| 2nd Qtr | 93,690 | 12,370 | 79,190 | 10,475 |
| 3rd Qtr (Projected) | 96,060 | 12,410 | 80,350 | 10,419 |

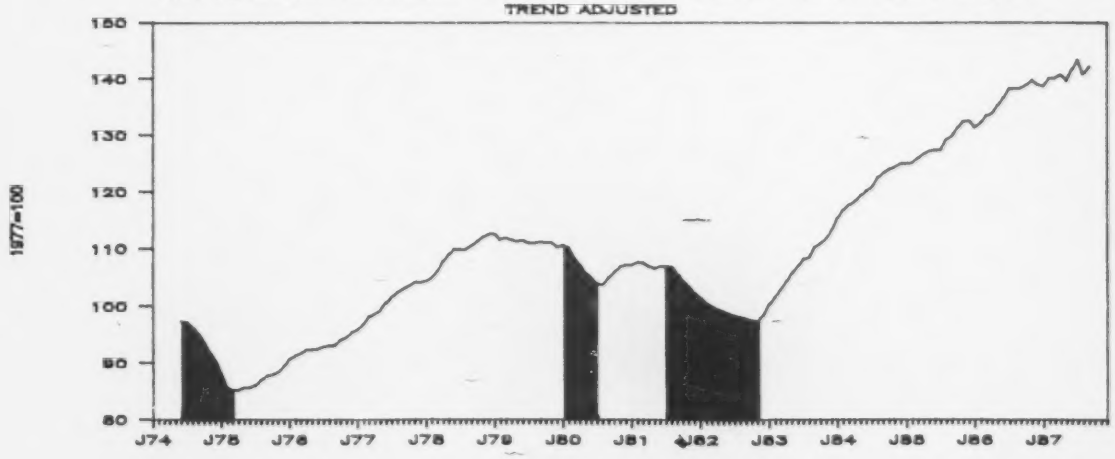
Source: Bureau of Economic Analysis, U. S. Department of Commerce.
Note: All personal income data reflects seasonally adjusted annual rates.

Alex B. Valz

## VIRGINIA INDEX OF LEADING INDICATORS




## VIRGINIA INDEX OF COINCIDENT INDICATORS



## SOUTHWEST VIRGINIA - A HISTORICAL ANALYSIS AND OUTLOOK

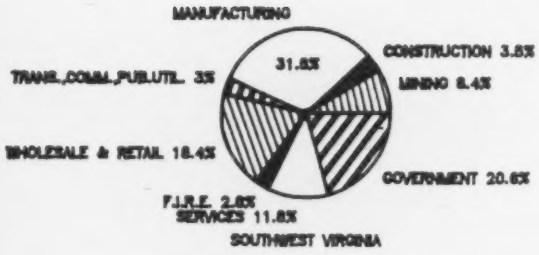
Much has been written about the healthy Virginia economy and the rapid growth that has occurred in the State's five largest Metropolitan Statistical Areas (MSAs) during the current economic recovery. Entering the sixth year of the recovery, the outlook for the State and the MSAs remains bright and their performance should outshine that for most of the nation. However, the prosperity of the State, as a whole, and the metropolitan areas overshadows the plight of a number of rural counties and small cities around Virginia that are economically depressed.

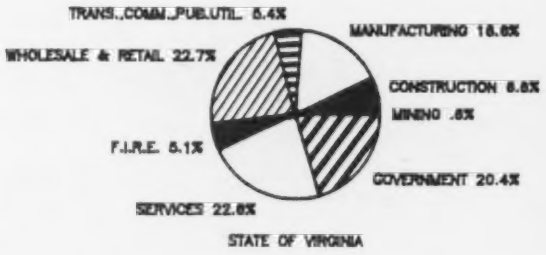
Many of Virginia's economically depressed areas are located in the Southwest region of the State. The Southwest region is comprised of 19 counties and 6 cities bordering Tennessee and North Carolina on the south, Kentucky on the west, and West Virginia on the north. Its eastern border consists roughly of the Blue Ridge Mountains on the Southeast and the Roanoke MSA on the Northeast. Included are Service Delivery Areas 1, 2, and 3, excluding the Roanoke MSA, under the Job Partnership Training Act (JTPA).

The outstanding characteristic of the Southwest region is that it is far less diverse in industrial mix than the remainder of Virginia. This characteristic contributes to the lack of stability in the regional economy. Manufacturing is, by far, the largest employing sector in Southwest Virginia, accounting for 31.5 percent of employment during 1986, nearly double the State proportion of 16.6 percent (see top chart on following page). Coal mining represents an 8.4 percent share of Southwest employment compared with 0.6 percent for Virginia. Together, manufacturing and mining account for almost 40 percent of the region's employment contrasted with about 17 percent for the State. With the exception of government, which is dominated by Virginia Polytechnic Institute and State University in Montgomery County, all other major sectors comprise a smaller portion of the total in the Southwest than they do in Virginia as a whole. The relatively small shares of the wholesale and retail trade; services; and finance, insurance, and real estate (FIRE) sectors in the Southwest indicate the region's rural and somewhat remote nature. The Roanoke and Bristol-Kingsport-Johnson City, Tennessee-Virginia MSAs act as shopping and financial centers for residents of the region, and the proximity of these two metropolitan areas is one factor that stifles growth of service-type industries within the more sparsely populated Southwest Virginia.

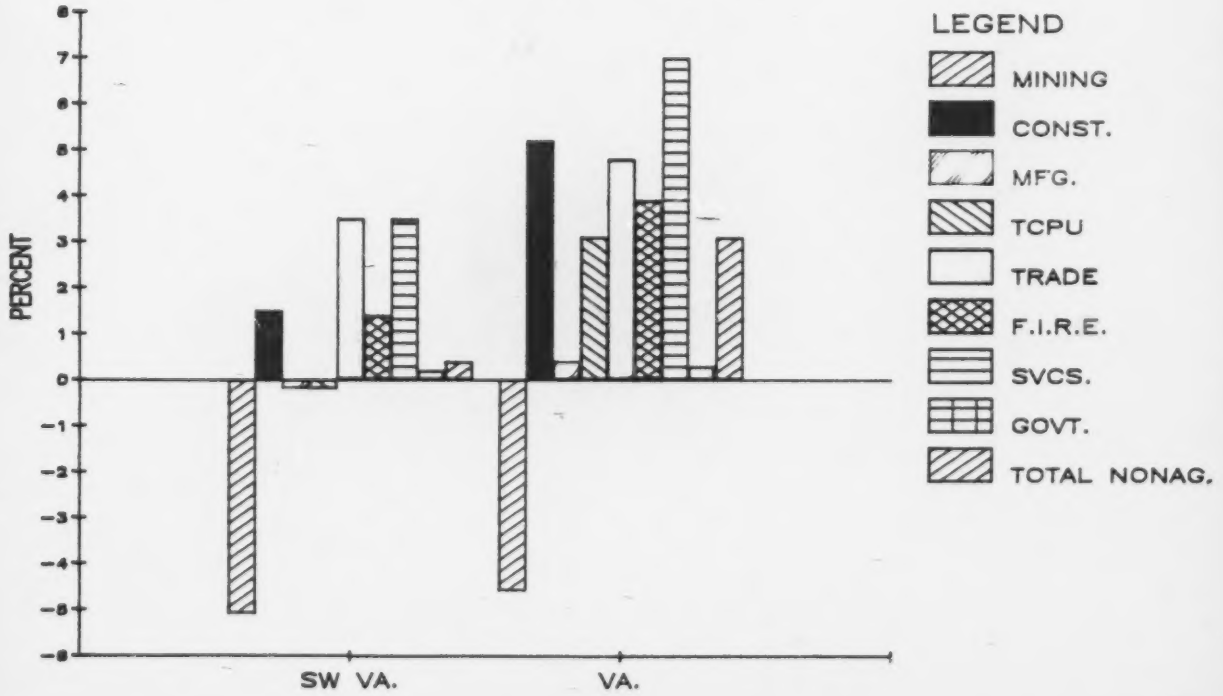
The employment trends in the Southwest region stand in stark contrast to the State trends during the 1980-1986 period. Total nonagricultural employment in Virginia averaged nearly 3.0 percent annual growth during a period that included two major economic downturns. Nonagricultural employment in Southwest Virginia showed an average yearly increase of only 0.4 percent during that time. As nearly all mining in the State is located in the Southwest region, the trend in this industry reflected an average 4.5 percent decline in both the State and the Southwest. Differences in the other sectors are more pronounced. Construction exceeded 5 percent growth per year in Virginia while it rose by only 1.5 percent annually in the Southwest. Manufacturing showed a slight recovery in Virginia but contracted by nearly 0.2 percent per year in the Southwest. Transportation, communications, and public utilities (TCPU) also shrank by 0.2 percent in the Southwest compared to growth in excess of 3.0 percent in the State. The trade, FIRE, services, and government sectors all showed improvement in the Southwest with trade and services both growing an average of about 3.5 percent annually. However, these gains were relatively insignificant compared with the healthy growth shown on the State level.

# INDUSTRY'S SHARE OF NONAG. EMPLOYMENT SOUTHWEST VIRGINIA VS. STATE OF VIRGINIA 1986

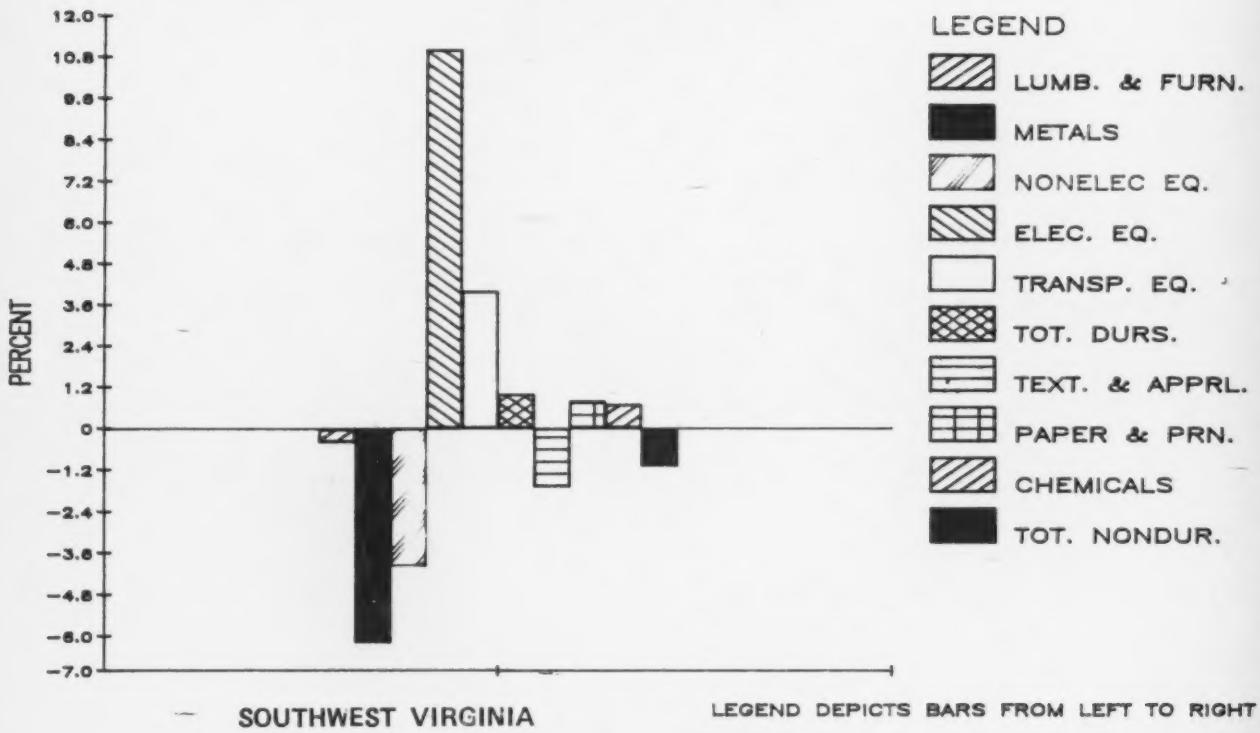



# ANNUAL AVERAGE GROWTH IN EMPLOYMENT 1980—1986



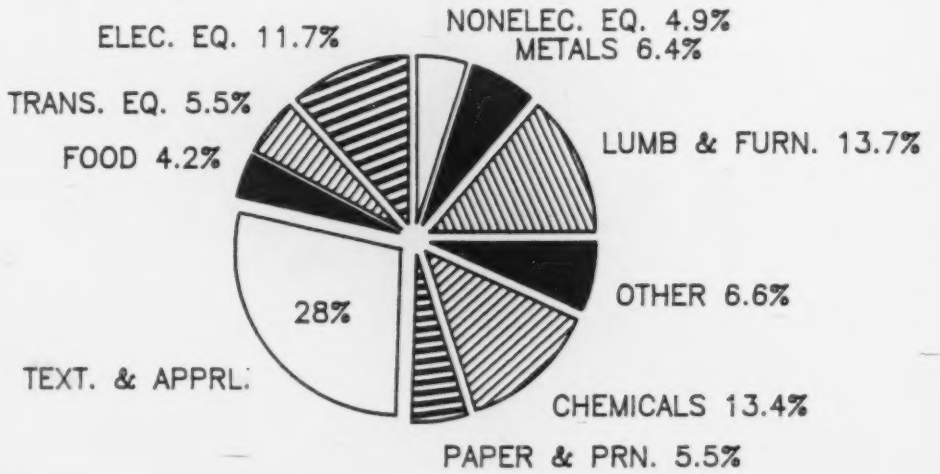
# AVERAGE MANUFACTURING GROWTH 1980—1986




SOUTHWEST VIRGINIA

LEGEND DEPICTS BARS FROM LEFT TO RIGHT

# PERCENT OF TOTAL MANUFACTURING SOUTHWEST VIRGINIA




1986

A further analysis of the mining and manufacturing industries is necessary for a full understanding of the employment trends in Southwest Virginia. As stated previously, the region's proportion of mining and manufacturing employment to total nonagricultural employment (40 percent) is more than double that for the State and the nation. Because of the high proportion of these industries, they can be assumed to be the basic sector or foundation of the Southwest economy. Economic base theory is founded on the principle that the basic sector exports goods and services from the local area to national markets and acts as a support for the local nonbasic sector which sells its goods and services locally. If there is high demand for a region's basic goods and services, income generated by the sales of those products will be spent on the local economy's nonbasic services enabling that sector to expand. A contraction in the demand for basic sector products will, of course, have a negative effect on nonbasic industries.[1]

During the 1980s, employment in the Southwest region's basic industries has been impacted by several negative factors of a national and worldwide scope.

1) The 1980-1982 Recession - Flat consumption for both durable and nondurable goods during this period erased most of Southwest Virginia's gains in manufacturing employment made during the 1970s. The region lost 5,600 manufacturing jobs and 4,800 mining jobs between the First Quarter 1980 and the First Quarter 1983. Especially hard-hit in manufacturing were the metals (-1,500 jobs), nonelectrical machinery (-1,200 jobs), and textile and apparel (-1,600 jobs) industries. With the tremendous loss of regional income caused by these dislocations, nonbasic industries, such as construction (-1,200 jobs) and trade (-1,100 jobs) followed the decline of the basic industries.

2) Foreign Competition - The strength of the U. S. dollar during the post-recession period combined with low foreign labor costs (especially in the Far East) and heavy automation in foreign manufacturing plants made imported goods cheap relative to those produced in this country. In Japan, manufacturing unit labor costs dropped 6.5 percent from 1977 to 1986 largely owing to technological change according to the Bureau of Labor Statistics. In contrast, unit labor costs in the United States rose 44.3 percent during the same span. However, the more recent weakening of the dollar has made U. S. products more competitive.

3) Decline of the Coal Mining Industry - During the decade of the 1970s, coal production surged in response to the spiraling costs of oil and environmental concerns regarding nuclear energy. According to a study by the Virginia Center for Coal and Energy Research (VCCER) at Virginia Polytechnic Institute and State University, the mining industries also benefitted from the inflation of the 1970s as the price of a ton of bituminous coal rose from $6.26 in 1970 to $24.52 a decade later. The prosperity of the 1970s had serious consequences for the 1980s. Overproduction in response to the high prices led to a lowering in the price of coal and many marginal operations were closed down. The surviving mines turned to mechanization and, in some cases, cut labor costs by lowering wage rates. Environmental regulations on mining and burning coal put additional pressure on the mines at a time when coal prices were heading down. The comparatively high price of U. S. coal has also led to increased foreign competition. Coal exports from the U. S. slipped 24 percent between 1981 and 1986. The consequence of all of these factors has been a drastic reduction in mining employment during the current decade. Employment in the industry in Virginia has dropped from a high of nearly 20,000 jobs in 1979 to 13,500 jobs in 1986. Unemployment in the coalfield counties of Buchanan, Dickenson, Lee, Russell, Tazewell, and Wise averaged 15.6 percent in 1986 compared with the State annual average of 5.0 percent. Additionally, economic hardship in the area has been compounded by the fact that many miners have exhausted their unemployment insurance (UI) benefits. Because there is no means of keeping count of UI benefit exhaustees, current unemployment rates in Southwest Virginia probably present an overly optimistic picture.

Outlook for the Southwest

The Southwest Virginia economy's future is inextricably linked to national and worldwide markets for its coal and manufactured products. While many employing sectors have been on the decline, others have done very well. The key to development of the region will be attracting employers that show stability during times of economic downturn when other industries are on the decline. The Southwest region's surplus of available labor and relatively low wage levels in most industries are two features that make the area attractive for industrial development. The proposed location of a 500-bed prison in Buchanan County would do much to alleviate that county's 16-plus percent unemployment rate.

The charts on the preceding page show the proportionate shares and the 1980-1986 trend of the manufacturing sectors in Southwest Virginia. Surprisingly, durable goods industries, such as electrical equipment and transportation equipment did exceptionally well during that period with the former averaging 11 percent growth per year. The availability of relatively cheap labor no doubt had much to do with the decision of those manufacturers to expand operations in the area. The near term outlook for these industries is bright as a sharply devalued dollar will make imported electronic goods and automobiles from Japan more expensive and improve the competitiveness of domestically produced goods. Declines in furniture, primary and fabricated metals, and nonelectrical equipment offset most of the increases in electrical goods and transportation equipment. The outlook for those industries is mixed. With a slowing in home building forecast, Statewide declines are projected in the furniture industry by Wharton Econometrics for the 1989-1996 period (see Table 1, following page). Nonelectrical machinery, which includes mine machinery, should fare better with the trend toward automation in the nation's mines and factories. Wharton forecasts average growth of 2.0 percent for 1989-1996. The outlook for metals is for the fabricated sector to rebound (1.4 percent growth per year) while the primary sector remains relatively flat.

Nondurables in Southwest Virginia did not do as well as durables during 1980-1986. Overall, nondurables dropped an average of about 1.0 percent per year with practically all of the loss of 2,000 jobs in textiles. The textile and apparel sectors, which comprise about 28 percent of manufacturing in the Southwest, have been particularly hurt by import competition. Heavy investment in automation and the falling dollar should make the textile industry more competitive against Japanese imports but the outlook for apparel is less optimistic according to Wharton. In apparel, import competition is from Taiwan, Hong Kong, Korea, China, and the Philippines, countries whose currencies have not been impacted by the lower dollar. Statewide apparel employment is forecast to decline by 0.4 percent per year during the 1989-1996 period. The food and kindred products industry declined by 2.5 percent from 1980 to 1986 while the other nondurables sectors--paper, printing, chemicals, and plastics--showed moderate growth. The chemicals sector, which employs about 7,000 persons, should benefit from the dollar drop since many of the products are man-made fibers used in textiles and apparel. All of these four nondurables divisions are expected to show employment growth statewide with yearly increases ranging from 0.2 percent in chemicals to 2.2 percent in printing and publishing from 1989 to 1996.

The overall outlook for manufacturing in Southwest Virginia is mildly optimistic as industrial production nationwide is expected to be one of the bright spots in an otherwise sluggish economy over the next several years. Growth, however, will be limited to those counties east of the coalfields. The coalfield counties generally have only a scattering of manufacturing plants.

TABLE 1

PROJECTED AVERAGE YEARLY PERCENTAGE GROWTH IN VIRGINIA MINING AND MANUFACTURING EMPLOYMENT

| Industry | 1986-89 | 1989-96 | 1986-96 |
|---|---|---|---|
| Total Manufacturing | 0.7% | 0.8% | 0.8% |
| Food/Kindred Products | 1.2 | 0.5 | 0.7 |
| Textile Mill Products | 1.8 | 0.5 | 0.9 |
| Apparel Manufacturing | -0.2 | -0.4 | -0.3 |
| Lumber & Wood Products | 1.4 | -0.3 | 0.2 |
| Furniture/Fixtures | 0.2 | -0.9 | -0.5 |
| Pulp & Paper Products | -0.3 | 1.1 | 0.7 |
| Printing & Publishing | 3.0 | 2.2 | 2.4 |
| Chemical Products | 0.8 | 0.2 | 0.4 |
| Rubber/Plastic Products | 1.2 | 1.5 | 1.4 |
| Stone, Clay, & Glass | 2.8 | 0.6 | 1.2 |
| Primary Metals | 1.6 | 0.1 | 0.5 |
| Fabricated Metals | -0.5 | 1.4 | 0.8 |
| Nonelectrical Machinery | 0.2 | 2.0 | 1.4 |
| Electrical Machinery | -0.7 | 2.5 | 1.6 |
| Transportation Equipment | -0.5 | 0.7 | 0.3 |
| Mining (Wharton) | 0.2 | 0.8 | 0.6 |
| (VCCER)* | -2.7 | 0.0 | -1.3 |
| (DOE)** | -5.0 | 0.0 | -2.7 |

*(Virginia Center for Coal and Energy Research)

**U. S. Department of Energy

The outlook for the coalfield portion of the region is rather dismal. According to a VCCER study, the price of Virginia coal, which is among the highest quality in the nation, slipped from $34.58 per ton in 1980 to $24.35 by 1986. The slippage reflects a weakening in demand for metallurgical coal worldwide and increased supply from competitors, both foreign and domestic. As discussed earlier, the decline in price has coincided with increased environmental restrictions. A combination of high union wages and a lack of suitable sites for manufacturing plants in the rugged terrain limit any attempts to diversify the economies of the coal counties. The future of the coal industry in the region and the nation is, therefore, uncertain. Forecasts range from mildly optimistic with small employment increases for the 1989-1996 period to disastrous with another decline of 33 percent in employment by the year 2000.

Wharton Econometrics projects coal employment to show slight increases in Virginia through 1996 but Wharton's projections are based somewhat on national trends and probably do not fully reflect the uniqueness of Virginia's coal industry. The VCCER forecasts mining employment to drop 12.5 percent during the 1985-2000 period based on productivity outpacing production and Virginia maintaining its five percent share of the national market. A U. S. Department of Energy (DOE) study cited by the VCCER study paints a far gloomier picture. The DOE projections incorporate a decline in production in Virginia's mines combined with productivity increases of 1 percent per year from 1985-2000. Under this scenario, coal mining employment would drop from 15,000 jobs in 1985 to about 10,000 jobs in 2000.

Beyond 2000, VCCER sees an even gloomier picture as cost and environmental protection will continue to be two major motives in finding coal alternatives. If cheaper, cleaner alternatives are developed, Virginia's coal production could easily drop by another 50 percent after 2000. The impact of these factors, however, could be offset by more efficient, cleaner coal-burning technologies.[2] A coal slurry pipeline would probably be of great benefit in reducing coal transportation costs which are now by railroad. However, construction of a pipeline will be impossible until Congress passes a bill granting its right to eminent domain in order for it to cross railroad lines.

Because of the Southwest region's low average per capita income (see Table 2 below) and remote, rural nature, attempts to develop the nonmanufacturing sectors will meet with very limited success. The thrust of development in the Southwest should be toward diversification of the basic manufacturing sectors. Traditionally, the State's direct role in development has been two-fold in: (1) providing the infrastructure of adequate roads and industrial parks and (2) providing tax incentives and supporting services to prospective employers. Another role of the State should be to aid local policymakers in selecting industries for attraction to the region. Such efforts should be focused on locational constraints (which industries could be attracted to the Southwest, considering what it has to offer?), and policy goals (which industries would be most beneficial to the region?).[3] The first of these conditions, locational constraints, is one in which local planners are well-versed. The second condition, policy goals, is one in which criteria are defined less extensively. Policy goals should include not only the number of jobs and wage levels of prospective employers as criteria, but the effect of different types of industries on the stability of the local economy should be considered. Portfolio variance analysis could be a valuable tool to this end. This technique treats a region's set of industries as a portfolio of assets, where each industry has a return (level of employment) and a risk (degree of instability) attached to it. There is considerable recent literature devoted to this approach to regional development, most notably research done by James A. Kurre and Barry R. Weller at Penn State University. We will be addressing this subject in more detail in later publications.

We are just beginning to analyze Southwest Virginia's links to the national and State economics. In coming issues of this publication, we will be discussing our attempts at modeling the region's economy through econometric and input/output analysis.

TABLE 2

BY AREA POPULATION, INDUSTRY, PER CAPITA INCOME, UNEMPLOYMENT, AND PARTICIPATION RATE

| County | Population 1986 | % Change 1980-86 | Major Industry (Mining or Manuf) | 1984 Per Capita Income (PCI) ($) | PCI % of State Average | Unemployment Rate (%) Avg 1986 | 1986 Labor Force Participation Rate %* |
|---|---|---|---|---|---|---|---|
| Alleghany | 13,900 | - 3.0 | Apparel, Plastics | 9,347 | 70.3 | 11.2 | 44.2 |
| Bland | 6,400 | 0.8 | Apparel | 7,263 | 54.6 | 7.0 | 51.5 |
| Buchanan | 35,800 | - 5.8 | Mining | 8,651 | 65.1 | 19.2 | 35.4 |
| Carroll | 27,300 | 0.1 | Textiles | 7,797 | 58.7 | 8.4 | 46.5 |
| Craig | 4,200 | 6.4 | Apparel | 10,474 | 78.8 | 6.6 | 51.3 |
| Dickenson | 19,800 | 0.0 | Mining | 8,246 | 62.0 | 17.8 | 30.9 |
| Floyd | 11,800 | 2.0 | Textiles, Apparel | 8,128 | 61.2 | 7.7 | 49.2 |
| Giles | 17,600 | - 1.2 | Chemicals | 9,513 | 71.6 | 10.3 | 48.8 |
| Grayson | 16,600 | 0.1 | Apparel | 8,106 | 61.0 | 11.5 | 46.7 |
| Lee | 26,600 | 2.5 | Mining | 7,584 | 57.1 | 13.0 | 31.8 |
| Montgomery | 66,100 | 4.4 | Chemicals | 8,891 | 66.9 | 6.6 | 48.1 |
| Pulaski | 34,200 | - 2.9 | Electrical Mach., Textiles, Apparel | 9,576 | 72.0 | 9.1 | 52.2 |
| Russell | 32,200 | 1.4 | Mining | 7,838 | 59.0 | 14.7 | 37.7 |
| Scott | 25,500 | 1.7 | Fab. Metal Prods. | 8,155 | 61.4 | 6.8 | 37.9 |
| Smyth | 33,000 | - 1.1 | Trans. Equip., Apparel | 8,343 | 62.8 | 9.2 | 46.2 |
| Tazewell | 50,400 | - 0.2 | Mining | 9,615 | 72.3 | 13.3 | 37.6 |
| Washington | 47,300 | 1.7 | Nonelectrical Mach., Apparel | 8,901 | 67.0 | 6.1 | 46.7 |
| Wise | 44,800 | 2.1 | Mining | 10,100 | 76.0 | 15.6 | 35.9 |
| Wythe | 25,600 | 0.3 | Electrical Mach., Apparel | 9,204 | 69.2 | 8.7 | 54.9 |
| City | | | | | | | |
| Bristol | 18,000 | - 5.5 | Food | 10,656 | 80.2 | 7.5 | 49.0 |
| Clifton Forge | 5,100 | 1.1 | Printing | 12,706 | 95.6 | 9.1 | 43.0 |
| Covington | 7,900 | -12.8 | Paper | 12,367 | 93.0 | 11.6 | 44.3 |
| Galax | 6,900 | 5.8 | Textiles, Furniture | 11,443 | 86.1 | 8.6 | 46.4 |
| Norton | 4,700 | - 1.2 | Food | 12,621 | 95.0 | 11.6 | 36.9 |
| Radford | 13,700 | 1.8 | Electrical Mach. | 10,200 | 76.7 | 8.2 | 47.9 |
| TOTAL SW AREA | 595,400 | 0.0 | - | 8,799 | 66.2 | 11.2 | 43.1 |
| Virginia | 5,787,100 | + 8.4 | - | 13,291 | | 5.0 | 49.9 |

* Civilian Labor Force/Population

Sources: Population, Tayloe Murphy Institute, University of Virginia; Per Capita Income, U. S. Department of Commerce.

Alex B. Valz

## FOOTNOTES

[1.] Grossman, p. 2

[2.] Seltzer, pp. 16-17

[3.] Kurre and Weller, pp. 1-2

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1. Conroy, Michael E. (1975), "The Concept and Measurement of Regional Industrial Diversification," Southern Economic Journal, v. 41, pp. 492-505.

2. Grossman, Philip J. (1984), Economic Base Analysis: Theory and Application, Tayloe Murphy Institute, University of Virginia.

3. Kurre, James A. and Weller, Barry R. (1984), "Measuring Regional Instability: Industry Weight Sensitivity of the Portfolio Variance Technique." Paper presented at the Eleventh Annual Convention of the Eastern Economic Association, Pittsburgh, PA.

4. Lackman, Conway L.; Valz, Alexander B., Jr.; and Wilson, James P. (1987), "The Kurre-Weller (K-W) Regional Portfolio Model Applied to Richmond, Virginia." Paper presented to the Virginia Association of Economists Meeting, April 1987.

5. Seltzer, Curtis (1987), Economic Development in Virginia's Coal Counties: Strategies for the Future, Virginia Center for Coal and Energy Research, Virginia Polytechnic Institute and State University, September 1987.

# HISTORICAL SUMMARY

## Performance of Indicators Over the Business Cycle

## GENERAL INFORMATION

For those interested in studying the business cycle in Virginia, this publication includes several of the economic time series for which data is readily available on a monthly basis. From time to time, new series will be added and, if necessary, others presently included will be discontinued.

### BUSINESS CYCLE TURNING POINTS

The shaded spaces on the charts represent the 1973-75, 1980, and 1981-82 recessions as designated by the National Bureau of Economic Research (NBER). The beginning of a recession is defined as the month when aggregate economic activity in the U. S. reaches a cyclical high, from which it begins to turn down, and the end as the month when it reaches a cyclical low, from which it begins to turn up. According to NBER, the 1973-75 recession began in November 1973 and ended in March 1975, the 1980 recession began in January 1980 and ended in July 1980, and the 1981-82 recession began in July 1981 and ended in November 1982.

### SEASONAL ADJUSTMENT

To correlate changes in a time series and changes in the business cycle it is desirable

### SEASONAL ADJUSTMENT (continued)

to eliminate, insofar as possible, the effect of irrelevant factors from the data comprising the series. All series currently published in Indicators have been adjusted to minimize regular seasonal fluctuations in the data in order to show only activity related to the business cycle.

### MONTHS FOR CYCLICAL DOMINANCE (MCD)

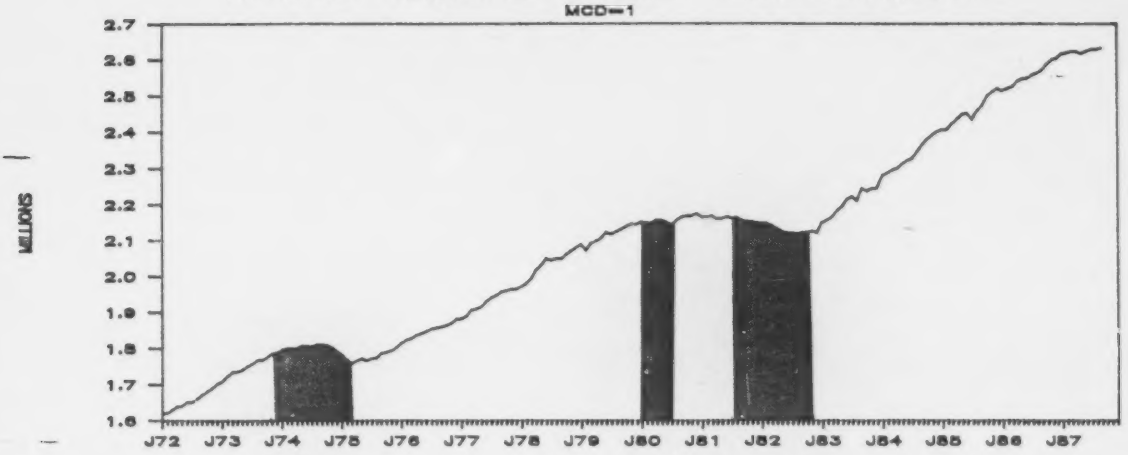
After seasonal adjustment there often remains a significant degree of purely random change, the effect of which can be minimized with a moving average equal in length to the MCD of the series. The MCD is an estimate of the length of the moving average which will reveal the cyclical pattern among the welter of random fluctuations in the data--the greater the MCD the more random and less cyclically significant are monthly changes in the series. Where noted, charts of historical data in this publication represent seasonally adjusted figures which have been averaged according to the MCD of each series.

## DATA SOURCES

| | |
|---|---|
| Nonagricultural Wage and Salary Employment | Virginia Employment Commission (VEC) |
| Manufacturing Employment | VEC |
| Total Unemployment Rate | VEC |
| Average Weekly initial Claims | VEC |
| Insured Unemployment Rate | VEC |
| Unemployment Insurance Final Payments | VEC |
| Average Manhours | VEC |
| Average Hourly Earnings | VEC |
| Average Weekly Earnings | VEC |
| Average Workweek | VEC |
| New Business Incorporations | Virginia State Corporation Commission |
| Valuation of Building Permits - 18 Cities | Local Building Inspectors |
| New Vehicle Registrations | Virginia State Division of Motor Vehicles |
| Electrical Power Sales | Virginia Power, Appalachian Power Co., Delmarva Electric Co., Tennessee Power Company |
| Taxable Retail Sales | Virginia State Department of Taxation |
| Taxable Retail Sales/CPI | Virginia State Department of Taxation |

## NONAG WAGE & SALARY EMPLOYMENT

MCD=1




## MANUFACTURING EMPLOYMENT

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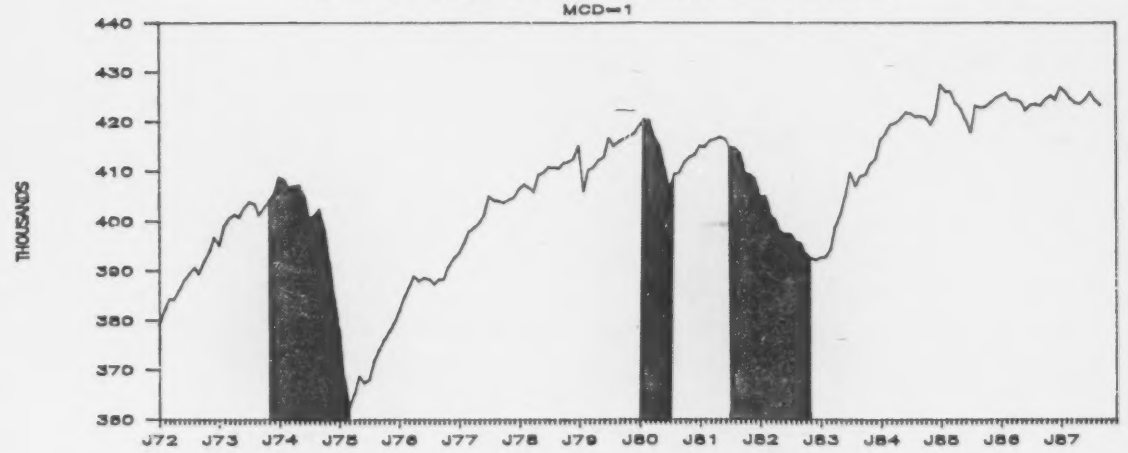
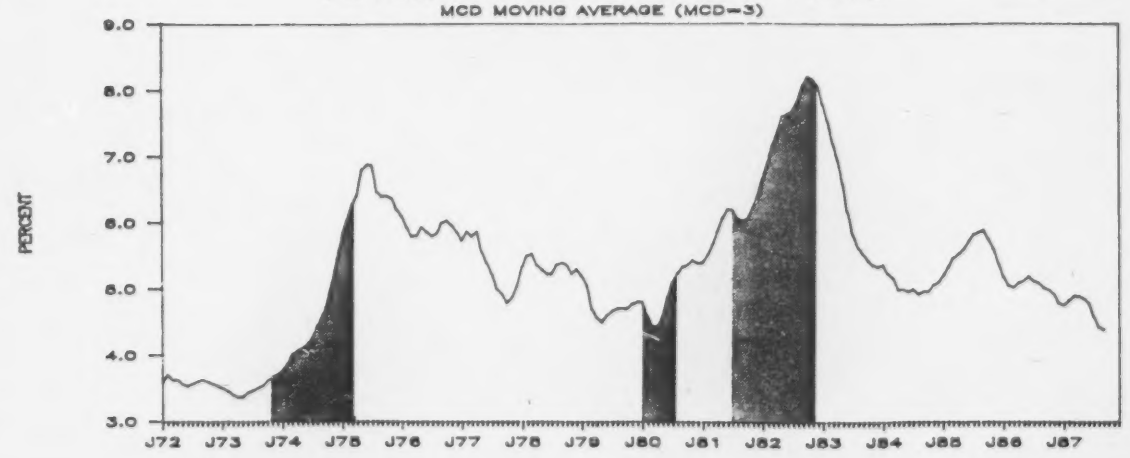



## TOTAL UNEMPLOYMENT RATE

MCD MOVING AVERAGE (MCD=3)



## AVERAGE WEEKLY INITIAL CLAIMS

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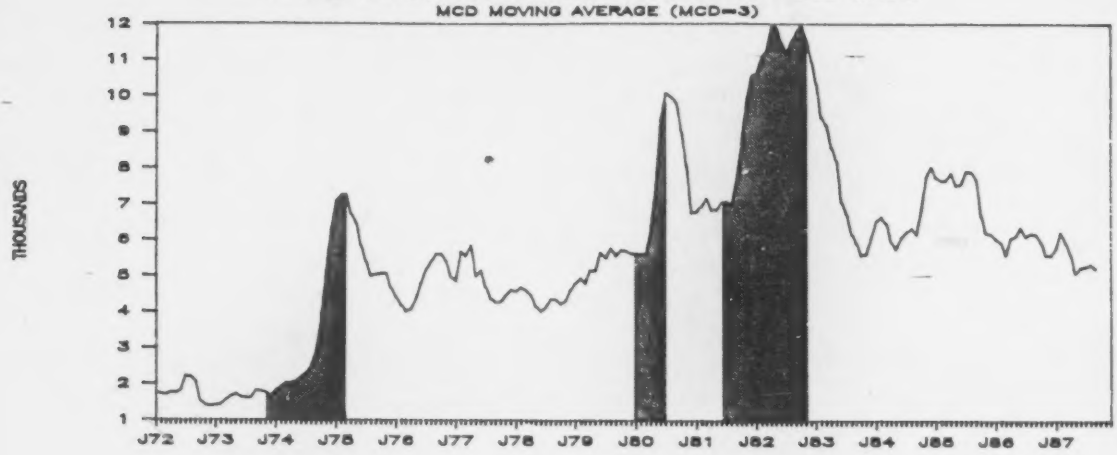


## INSURED UNEMPLOYMENT RATE

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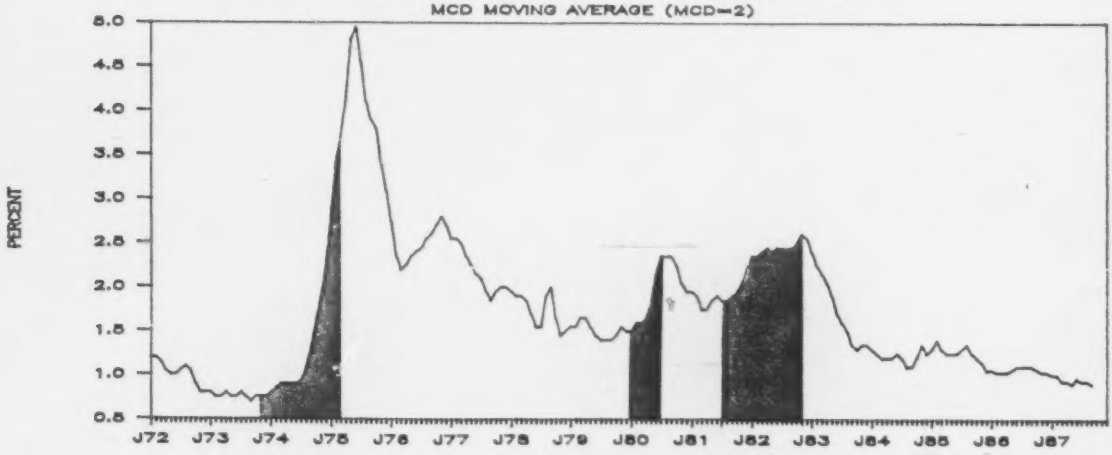


## U. I. FINAL PAYMENTS

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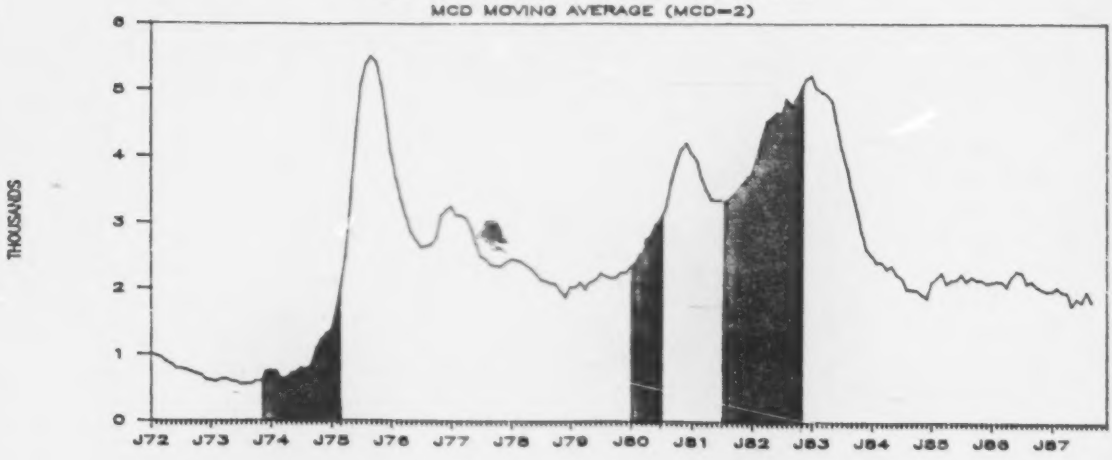
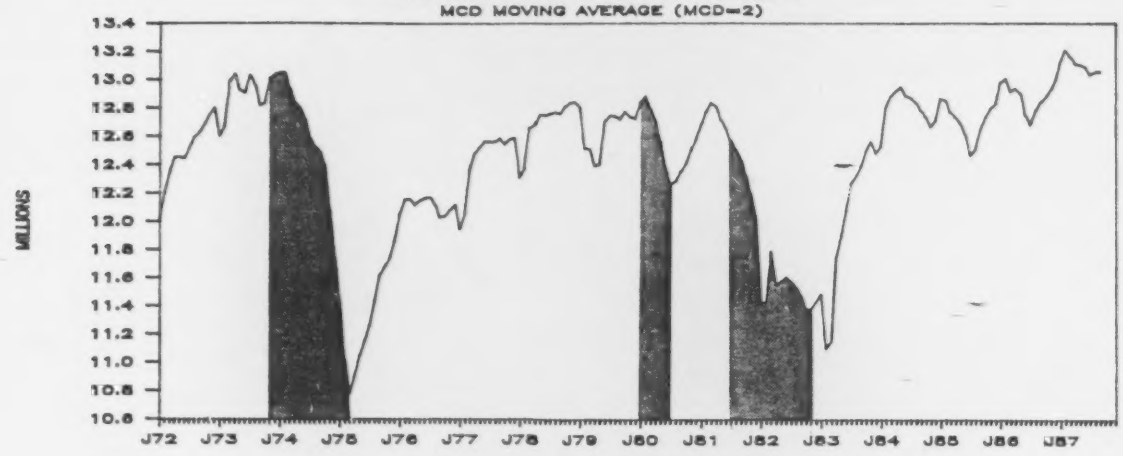


## AVERAGE MANHOURS

MCD MOVING AVERAGE (MCD=2)




## AVERAGE HOURLY EARNINGS

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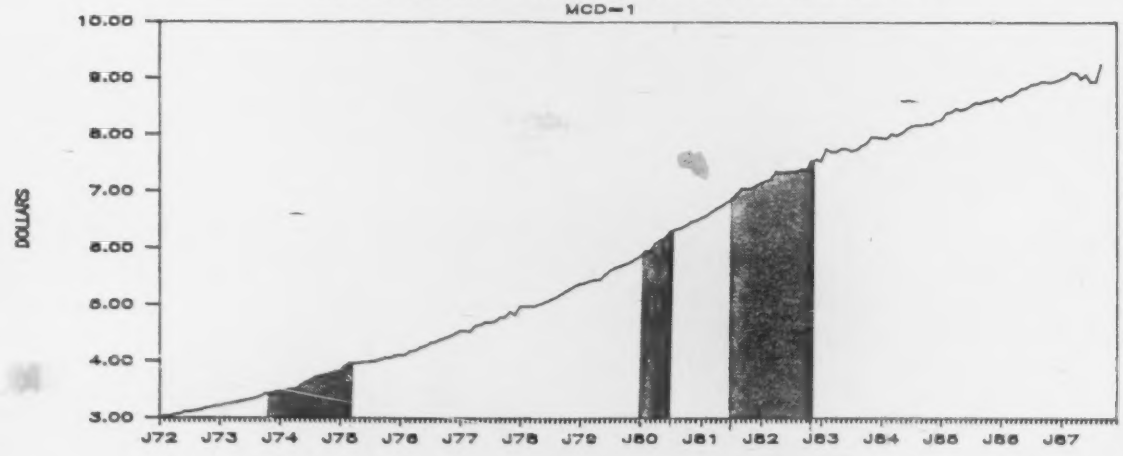


## AVERAGE WEEKLY EARNINGS

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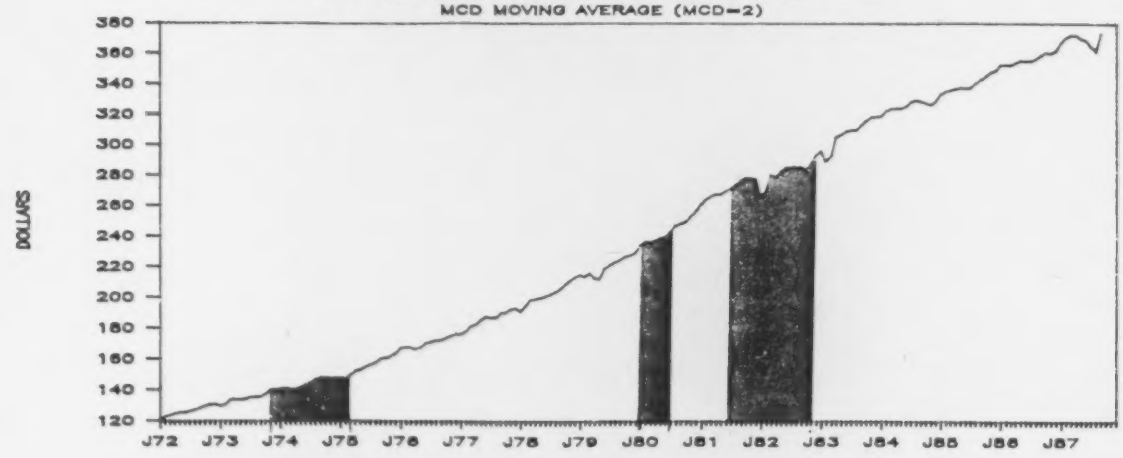

## AVERAGE WORKWEEK

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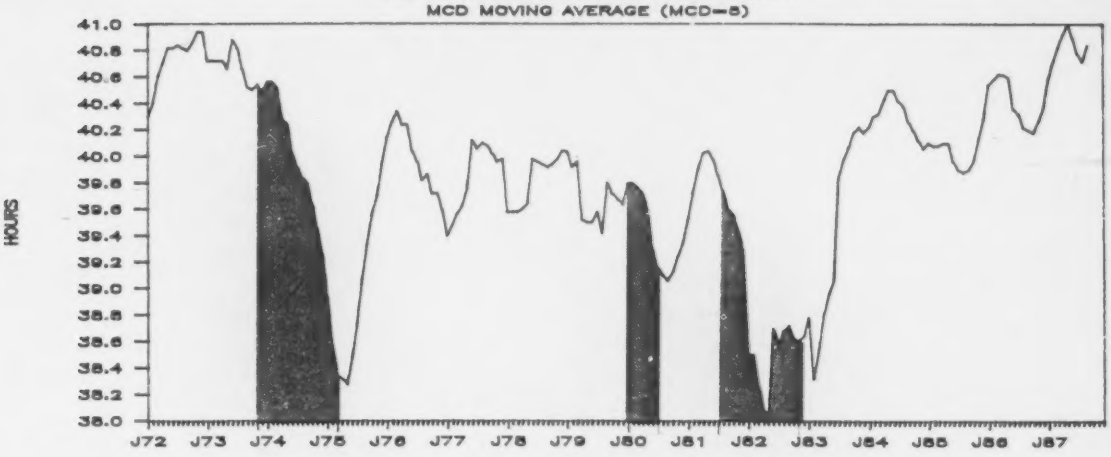


## NEW BUSINESS INCORPORATIONS

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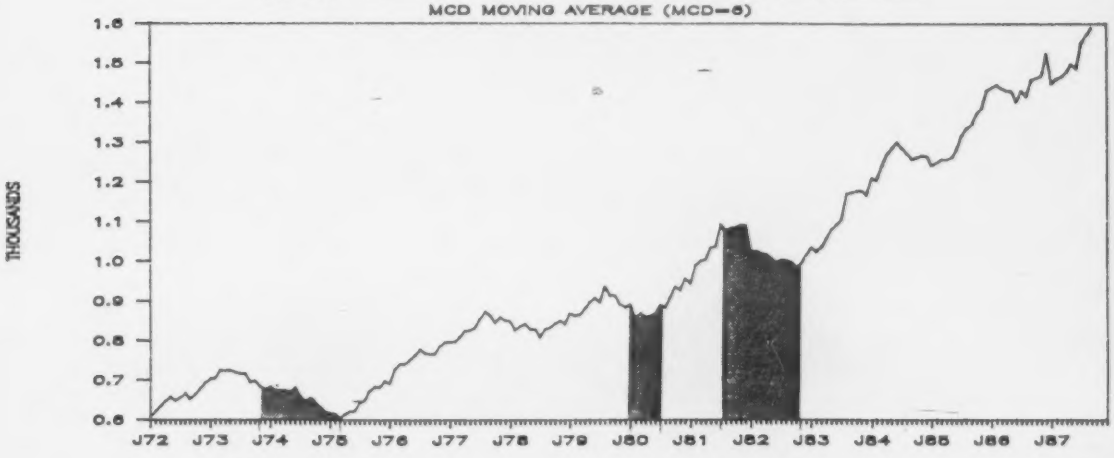


## VALUATION OF BUILDING PERMITS

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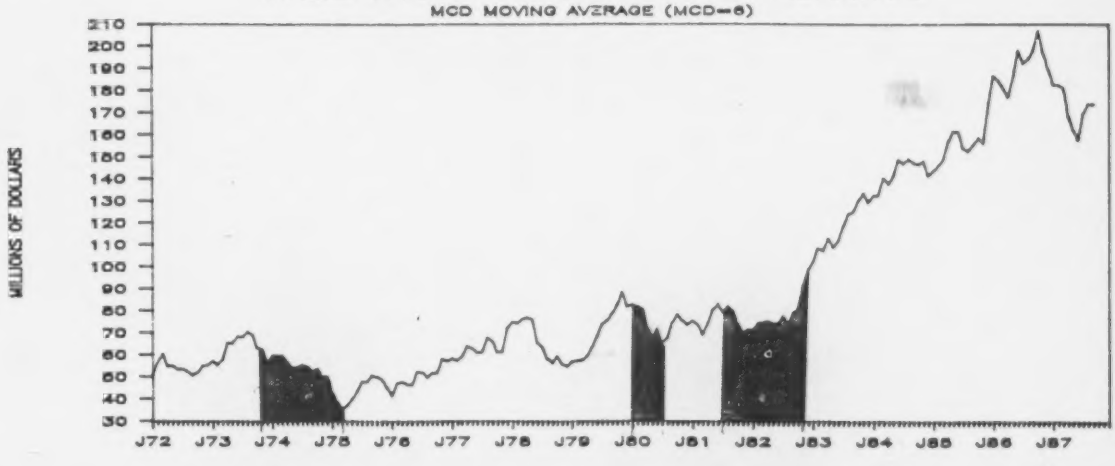

## NEW VEHICLE REGISTRATIONS

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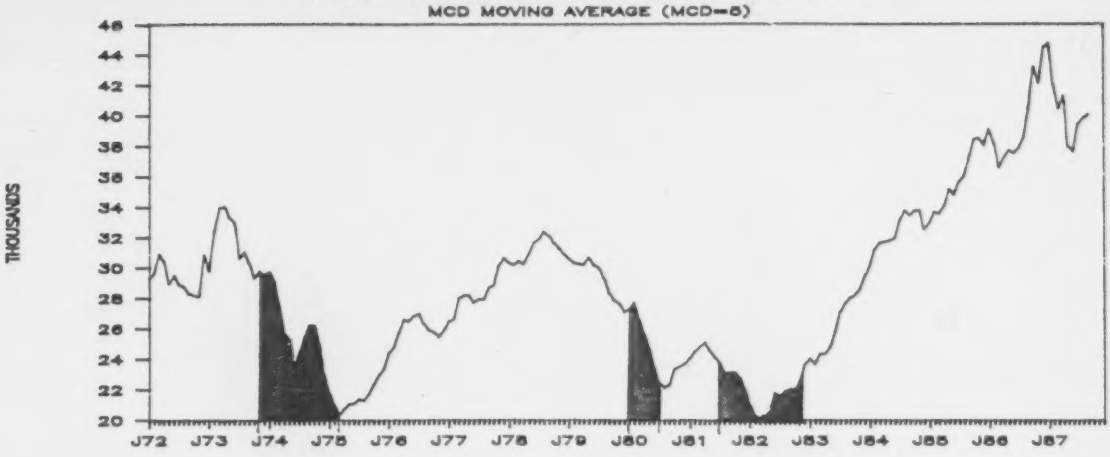


## ELECTRICAL POWER SALES

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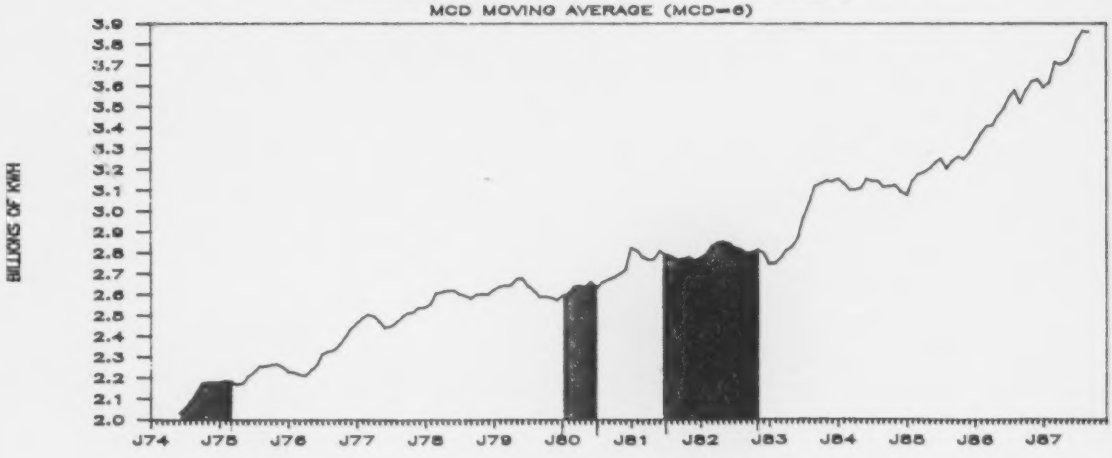


## TAXABLE RETAIL SALES

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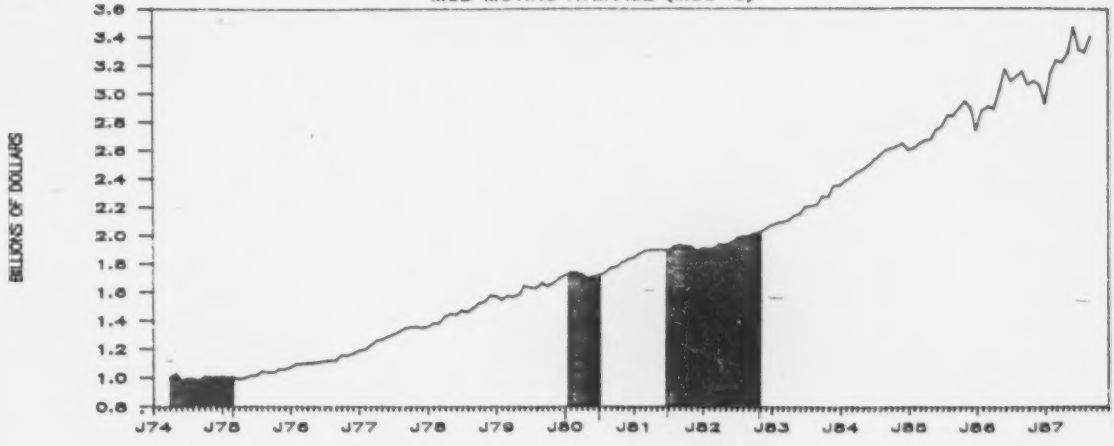

TAXABLE RETAIL SALES/CPI
MCD MOVING AVERAGE (MCD=6)
1967 DOLLARS (BILLIONS)
1.1
1.0
0.9
0.8
0.7
0.6
0.5
J74
J75
J76
J77
J78
J79
J80
J81
J82
J83
J84
J85
J86
J87

*Virginia Employment Commission*
*Economic Information Services Division*
*Post Office Box 1358*
*Richmond, Virginia 23211*

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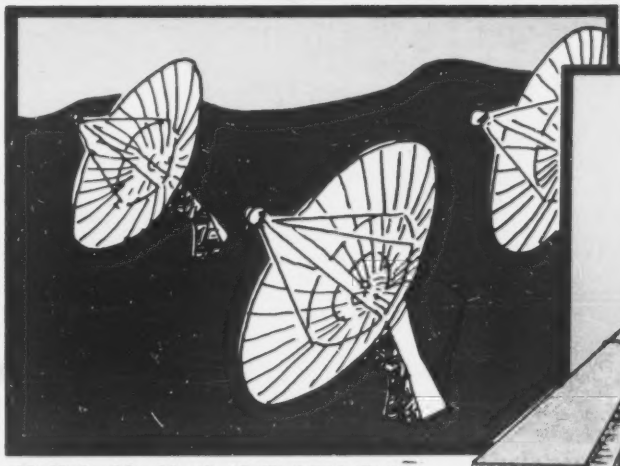
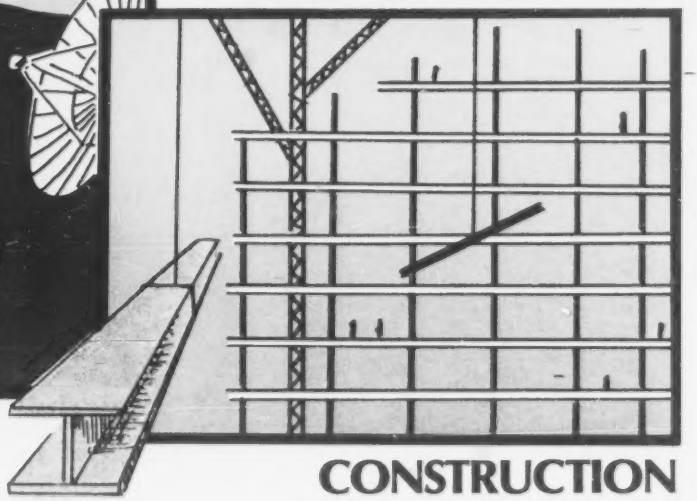
# VIRGINIA ECONOMIC INDICATORS

VOL. XIX NO. 4

## 4th QUARTER 1987 DATA

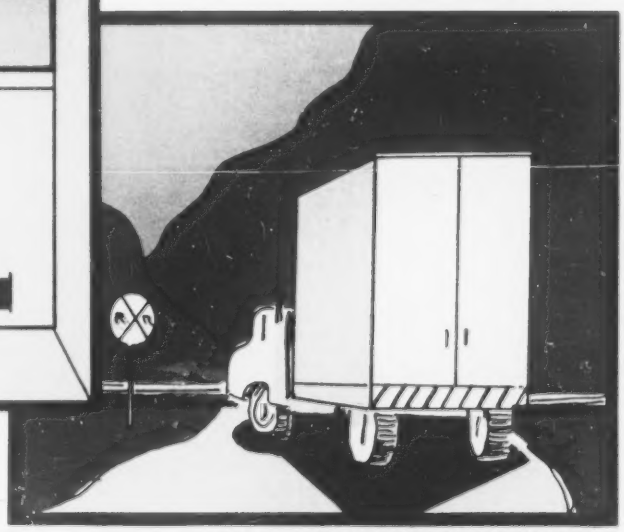


COMMUNICATION



CONSTRUCTION

BANKING



TRANSPORTATION

Virginia Employment Commission

# FOREWORD

This publication is designed to depict the movement of Virginia's key economic indicators in graphic and tabular form with accompanying narrative analysis.

We welcome any comments, suggestions, or questions concerning Virginia Economic Indicators. Please contact Dewey T. Oakley, Director, Economic Information Services Division, P. O. Box 1358, Richmond, Virginia 23211, telephone (804) 786-7496, for additional information or explanation of the contents of this document.

TABLE OF CONTENTS


| | Page |
|---|---|
| FOREWORD | iii |
| ECONOMIC OUTLOOK | vii |
| HIGHLIGHTS VIRGINIA ECONOMIC INDICATORS, FOURTH QUARTER 1987 | viii |
| VIRGINIA ECONOMIC INDICATORS, FOURTH QUARTER DATA | 1 |
| EMPLOYMENT AND UNEMPLOYMENT INDICATORS, JANUARY 1986 TO DECEMBER 1987 | 2 |
| Nonagricultural Wage & Salary Employment | |
| Manufacturing Employment | |
| Total Unemployment Rate | |
| Average Weekly Initial Claims | |
| Average Weekly Insured Unemployment Rate | |
| U. I. Final Payments | |
| MANUFACTURING PRODUCTION WORKER INDICATORS, JANUARY 1986 TO DECEMBER 1987 | 4 |
| Average Weekly Hours | |
| Average Manhours | |
| Average Hourly Earnings | |
| Average Weekly Earnings | |
| BUSINESS INDICATORS, JANUARY 1986 TO DECEMBER 1987 | 6 |
| New Business Incorporations | |
| Valuation of Building Permits | |
| New Vehicle Registrations | |
| Electrical Power Sales | |
| Taxable Retail Sales | |
| DATA SUMMARY, DECEMBER 1987 | 8 |
| SUMMARY: MOVEMENT OF INDICATORS, JANUARY 1986 TO DECEMBER 1987 | 8 |
| DATA SUMMARY, OCTOBER AND NOVEMBER 1987 | 9 |
| THE VIRGINIA LEADING AND COINCIDENT INDEXES | 10 |
| A REVIEW OF NONAGRICULTURAL EMPLOYMENT'S PERFORMANCE IN VIRGINIA IN 1987 AND SUMMARY EMPLOYMENT FORECASTS FOR 1988-1990 | 12 |
| EMPLOYMENT IN NONAGRICULTURAL INDUSTRIES IN VIRGINIA, ANNUAL AVERAGES | 13 |
| HISTORICAL SUMMARY, PERFORMANCE OF INDICATORS OVER THE BUSINESS CYCLE | 15 |

ECONOMIC OUTLOOK - U. S.

1988, 1989, and 1990 U. S. Forecast Highlights

- Stronger than expected growth in the fourth quarter of Calendar Year (CY) 1987 resulted in a moderate 3.0 percent expansion in Gross National Product (GNP) for the year.
  - Although consumer spending experienced its largest decline in seven years, 3.1 percent, this was less than previously anticipated.
  - Inflation for the year was 3.7 percent, double the 1986 rate, but still far from the double-digit rates of 1979-1981. The increase over last year is largely due to higher import prices and no additional oil price declines.
  - The other side of import price inflation is the 12.8 percent increase in exports as a result of the sharp decline of the dollar against major currencies.
  - Personal savings as a percent of disposable income fell to its lowest rate in 40 years, 3.8 percent.
- Real GNP growth slows down to 2.5 percent in CY 1988, while the inflation rate inches upward.
  - There have been early encouraging signs that a recession will not occur this year. Initial claims for unemployment insurance dropped sharply, for the most part reversing a prior increase. Also, auto sales were stronger than expected in January and early February.
  - Last October's stock market crash is having a limited impact on consumer spending. Consumer confidence has recovered most of the loss that occurred in the first two months after the crash.
  - Inventory buildup in recent months should not be as much of a problem as the figures would suggest. Since most of the accumulation is in imported goods, a cutback in domestic production will not be necessary to correct the excess.
  - The dollar will continue to fall throughout 1988, but real export growth could slow down due to diminished growth and higher inventories overseas.
  - Inflation will be slightly higher in 1988, 4.0 percent, and may go even higher if the dollar's decline results in more pressure on the prices of imports and import-competing goods.
- Growth should start out strong in the first half of CY 1989. Then, partly due to earlier monetary tightening by the Fed, the economy will slow down considerably in the third quarter.
  - This growth recession will last approximately four quarters.
  - The unemployment rate during the recession will be no higher than 6.5 percent.
  - The dollar will experience a small decline in 1989, 0.9 percent, followed by a slight recovery in 1990 as a result of the growth recession.
- As mortgage rates climb, housing starts will decline and then, in 1990, move above the pre-recession level of 1988.
- Oil prices should remain stable, in the $16 to $19 a barrel range throughout the forecast period.
- A tax increase of some kind is likely to be enacted next year.
- The inflation rate will rise to 4.8 percent in 1989, then fall to 4.1 percent in 1990.
- An increase in the minimum wage will probably be in effect by the middle of CY 1989.

James P. Wilson

HIGHLIGHTS
VIRGINIA ECONOMIC INDICATORS
Fourth Quarter 1987

- During Fourth Quarter 1987, three of the Virginia economic indicator series set records on a seasonally adjusted basis.
  - Nonagricultural wage and salary employment attained new highs throughout the quarter, reaching 2,722,900 in December, 4.2 percent higher than in December 1986.
  - Manufacturing employment reached a record 429,900 jobs in November as the dollar decline made Virginia manufacturers more competitive on both domestic and world markets.
  - Expanded general consumption plus a high level of factory output pushed electric power sales to an all-time high of 3,957.2 million kilowatt hours in December.
- The general high level of economic activity caused the four unemployment-related indicators to achieve their best performances in a number of years during the fourth quarter.
  - The total unemployment rate ended the year at 4.0 percent in December which was tied with this past July for the lowest jobless rate in 14 years.
  - The insured unemployment rate was at a 14-year low of 0.8 percent in both October and November.
  - Unemployment insurance final payments fell to a 13-year low of 1,630 in November.
  - Average weekly initial claims at 4,452 in October were at the lowest level in 9 years.
- Calendar Year 1987 was another banner year for nonagricultural employment in Virginia with the annual average nonfarm employment level of 2,678,100 workers being 4.7 percent above the 1986 annual average. This means an impressive 120,400 new jobs were created for Virginia workers in 1987. Seven of the eight major employing divisions--manufacturing, construction, transportation, trade, finance, services, and government--all reached never-before-attained employment levels in 1987.
- Virginia mining was the only major employing division that did less well employment-wise in 1987 than in 1986. Mine employment was down to an average of 15,600 jobs in 1987, for a reduction of 5.5 percent or 900 fewer jobs than in 1986. Coal production after lagging much of the year did, however, move ahead of the 1986 level in the waning months of the year. Coal production in Virginia averaged 44,194,000 short tons in 1987, 7.3 percent higher than the 41,178,000 short tons mined in 1986.
- Virginia saw a 44.5 percent increase for 1987 in Pentagon awards made to defense contractors in the State, according to the Defense Department Atlas annual statistical report. That increase pushed Virginia from eighth place to fifth among states for such contracts, according to Prime Contract Awards by State, another annual federal statistical report. Virginia received $7.8 billion in contracts for the 12-month period ending September 30, 1987. California continued to pace the nation last year in receipt of contracts despite an 11.6 percent drop in awards compared with the previous year, the reports show. Setting aside contracting, California benefited the most from the Defense Department's presence, with $12.7 billion flowing into that state in pension checks and salaries for civilian, active duty, and reserve employees. Virginia, Texas, Florida, and Georgia rounded out the top five states benefiting the most from the Defense Department, retaining the same positions in Fscal Year 1987 they had the year before.
- The Consumer Price Index for All Urban Consumers (CPI-U) showed an annual gain of 3.7 percent in 1987 to average 113.6 (1982-4 = 100). This compared to only a 1.9 percent rise in the average CPI-U in 1986. Higher food and fuel prices along with rising interest rates caused more inflation in 1987. Fuel prices had fallen in the first half of 1986. Starting with January 1988, the reference base for the CPI shifted from 1967 = 100 to 1982-4 = 100. The CPI-U average on the old basis was 340.4 for 1987 and 328.4 for 1986.
- According to the U. S. Bureau of Labor Statistics, in 1987 business productivity was 0.9 percent higher than in 1986 as output advanced 3.4 percent and hours of all persons rose 2.4 percent. Employment grew 2.5 percent (about 2.2 million jobs) during 1987, a cumulative increase of 13.6 percent (10.8 million jobs) since the recession-low of 1982. During 1986, productivity rose 1.9 percent. Hourly compensation increased 2.9 percent in 1987, compared with a 3.9 percent gain during 1986. The increase in 1987 was the smallest since 1955 (when a 2.5 percent increase was recorded). Unit labor costs increased a modest 2.0 percent during both 1987 and 1986. Productivity advanced slowly in the business and nonfarm business sectors when 1987 is compared with 1986, reflecting strong growth mid-year and weak performance in the first and fourth quarters. Productivity gains for the year in these two sectors were about half as large as those of 1986. In manufacturing, productivity growth was more rapid than in the broader sectors, but was also smaller than the preceding year's increase.
- The population of Virginia increased 10.4 percent between April 1, 1980, and July 1, 1987, from 5,346,818 to 5,904,000, according to the Center for Public Service at the University of Virginia.

VIRGINIA ECONOMIC INDICATORS

VOL. XIX, NO. 4 FOURTH QUARTER DATA

## Series Characterized by Lack of Real Movement in Fourth Quarter

Fourth Quarter 1987 saw the 15 indicators used to measure the Virginia economy perform in much the same manner that they have throughout 1987--pretty much marking time at overall very high levels. The employment-related series remained extremely strong, but the unemployment and production worker series allowed seasonal adjustment factors to cause slightly negative variances from previous records in some fourth quarter months. The business-related series too, with the exception of electric power sales, tended to be just off from previously set records. The slight negative movements exhibited by some of the series seemed to have little impact on the currently strong Virginia economy. As we have stated previously in 1987, when the series are as high as they are currently, it becomes difficult to achieve new record levels of peformance every single month. This continuing high level of performance without overheating may just keep the over five-year-old recovery going a while longer.

October saw seven series up and eight down. November was the strongest fourth quarter month with nine series up, one unchanged, and five down. In December, seven series were up, one was unchanged, and seven were down.

In spite of the indicators' overall lack of movement this quarter, three series still set new records and four others recorded their best performance in years. Nonagricultural employment broke new ground each month of the quarter to finish 1987 at the all-time high level of 2,722,900 jobs. Manufacturing employment hit a record 429,900 jobs in November. Electric power consumption reached a new high of 3,957.2 million kilowatt hours in December. Both the total and insured unemployment rates were at 14-year lows throughout most of the fourth quarter. The final payments series was at a 13-year low in November, and average weekly initial claims reached a 9-year low in October.

The six-month moving average of rising indicators (page 8) serves to illustrate the third quarter's performance. The moving average enhances analysis because it smooths out much of the irregularity present in many of the individual series.

## Three Series Set All-Time Records, Four Others Record Best Performances in Years

Nonagricultural wage and salary employment continued to be the star performer among the indicators, rising to new heights each month of the fourth quarter. Nonfarm employment in Virginia finished the quarter and 1987 at the all-time record level of 2,722,900 jobs in December, an impressive 109,700 jobs above December a year ago. Helping to produce the good employment picture were robust trade and service sectors and a still strong Statewide construction level. Manufacturing employment was at very high levels throughout the quarter, peaking at a record 429,900 in November. December's factory level was off by an insignificant 200 (shows as no change on the summary table on page 8).

The four unemployment-related indicators all started out the quarter strong; then a couple of them wavered just a bit by December. Much of this seemed to be from variances in the seasonal factors as employment overall was still very strong. The total unemployment rate fell throughout the fourth quarter, ending the year at a low 4.0 percent. The 4.0 percent December total unemployment rate was tied with last July for the lowest jobless rate in 14 years! Average weekly initial claims fell to a 9-year low of 4,452 in October, then increased to the not very high upper 5,000 range by year's end. The insured unemployment rate remained at a 14-year low of 0.8 percent in both October and November, before moving up to a still low 1.0 percent in December. Final payments fell the first two months of the quarter, reached a 13-year low of 1,630 in November, then rose just a bit to 1,661 in December.

The four production worker series were generally slightly off in fourth quarter from September's high levels. October and November downtrends were largely corrected by December, but levels still remained just under those of September. Much of the weakness could be traced to the seasonal adjustment factors.

The five somewhat volatile business-related series were where much of the fourth quarter's negative movement was centered. New business incorporations, the valuation of building permits, and new vehicle registrations were all just below levels attained earlier in the year and were also somewhat down from fourth quarter 1986. One-time tax incentives at the end of 1986 produced all-time record levels in building permits and vehicle registrations last year. The current levels for all three series were actually fairly robust, but just not quite as high as they had been. Electric power sales were up in October, down slightly in November, then set an all-time record of 3,957.2 million kilowatt hours in December. Taxable retail sales were off from September's record in October, back up a little bit in November, then off again in December.

William F. Mezger

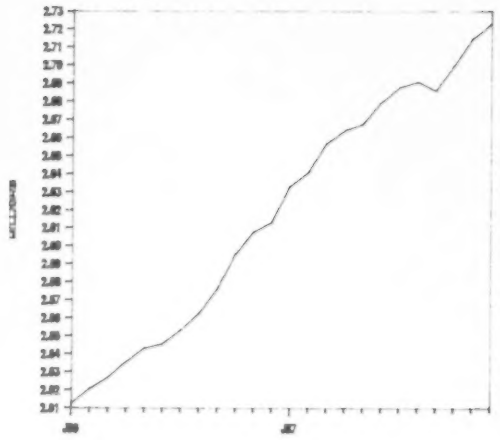
EMPLOYMENT AND UNEMPLOYMENT INDICATORS
January 1986 to December 1987

| | Nonagricultural Wage & Salary Emp.* (Thousands) | | Manufacturing Employment* (Thousands) | | Total Unemployment Rate* (Percent) | |
|---|---|---|---|---|---|---|
| 1986 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 2,469.9 | 2,512.6 | 421.2 | 425.5 | 5.6 | 5.0 |
| February | 2,470.2 | 2,520.6 | 422.5 | 425.9 | 5.6 | 5.0 |
| March | 2,494.0 | 2,526.8 | 422.3 | 424.4 | 5.5 | 5.2 |
| April | 2,525.4 | 2,535.5 | 423.0 | 424.7 | 5.2 | 5.3 |
| May | 2,556.0 | 2,543.3 | 422.6 | 424.3 | 5.0 | 5.2 |
| June | 2,581.4 | 2,545.8 | 423.2 | 422.4 | 5.2 | 5.3 |
| July | 2,560.9 | 2,553.2 | 422.6 | 423.9 | 5.1 | 5.0 |
| August | 2,567.6 | 2,562.5 | 425.6 | 423.9 | 4.8 | 5.2 |
| September | 2,593.8 | 2,575.8 | 428.4 | 424.2 | 4.6 | 5.1 |
| October | 2,613.4 | 2,595.2 | 428.8 | 425.8 | 4.5 | 4.8 |
| November | 2,626.0 | 2,607.7 | 429.0 | 426.0 | 4.6 | 4.7 |
| December | 2,634.1 | 2,613.2 | 427.4 | 426.5 | 4.5 | 4.5 |
| 1987 | | | | | | |
| January | 2,588.4 | 2,633.2 | 423.3 | 427.1 | 4.8 | 4.3 |
| February | 2,588.0 | 2,640.8 | 424.7 | 428.1 | 4.8 | 4.3 |
| March | 2,622.3 | 2,656.8 | 425.8 | 427.9 | 4.6 | 4.3 |
| April | 2,653.5 | 2,664.2 | 427.2 | 428.9 | 4.2 | 4.3 |
| May | 2,681.3 | 2,668.0 | 427.5 | 429.2 | 4.1 | 4.2 |
| June | 2,711.8 | 2,679.6 | 431.1 | 430.2 | 4.3 | 4.4 |
| July | 2,695.9 | 2,687.8 | 429.8 | 431.1 | 4.1 | 4.0 |
| August | 2,693.7 | 2,691.0 | 431.3 | 429.6 | 3.9 | 4.2 |
| September | 2,704.8 | 2,686.0 | 432.6 | 428.7 | 3.9 | 4.3 |
| October | 2,718.9 | 2,700.0 | 432.3 | 429.3 | 3.9 | 4.2 |
| November | 2,733.7 | 2,714.7 | 432.5 | 429.9 | 4.0 | 4.1 |
| December | 2,744.7 | 2,722.9 | 430.6 | 429.7 | 4.0 | 4.0 |

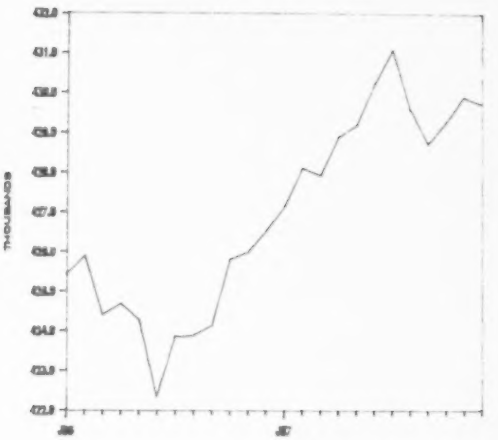
| | Average Weekly Initial Claims (Number) | | Avg. Wkly. Insured Unemployment Rate (Percent) | | U. I. Final Payments (Number) | |
|---|---|---|---|---|---|---|
| 1986 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 8,597 | 5,427 | 1.6 | 1.1 | 2,439 | 2,401 |
| February | 6,258 | 5,778 | 1.4 | 1.0 | 1,888 | 2,009 |
| March | 5,133 | 5,634 | 1.3 | 1.0 | 2,276 | 1,969 |
| April | 6,049 | 6,812 | 1.1 | 1.1 | 3,089 | 2,194 |
| May | 4,273 | 5,985 | 0.9 | 1.1 | 2,292 | 1,698 |
| June | 5,266 | 6,284 | 0.9 | 1.1 | 2,186 | 2,213 |
| July | 6,117 | 6,117 | 1.0 | 1.1 | 2,244 | 2,141 |
| August | 4,323 | 6,247 | 0.9 | 1.1 | 1,739 | 1,941 |
| September | 3,974 | 6,190 | 0.8 | 1.1 | 1,763 | 2,299 |
| October | 4,366 | 5,478 | 0.8 | 1.0 | 1,504 | 1,923 |
| November | 4,930 | 5,162 | 0.9 | 1.0 | 1,319 | 1,809 |
| December | 11,709 | 6,143 | 1.2 | 1.1 | 2,007 | 2,205 |
| 1987 | | | | | | |
| January | 9,593 | 6,064 | 1.3 | 0.9 | 1,970 | 1,928 |
| February | 7,054 | 6,484 | 1.3 | 1.0 | 1,849 | 1,963 |
| March | 4,828 | 5,323 | 1.1 | 0.9 | 2,327 | 2,027 |
| April | 4,484 | 5,055 | 0.9 | 0.9 | 2,661 | 1,882 |
| May | 3,519 | 4,963 | 0.8 | 0.9 | 1,917 | 1,404 |
| June | 4,810 | 5,733 | 0.9 | 1.1 | 2,268 | 2,319 |
| July | 5,192 | 5,161 | 0.7 | 0.8 | 1,834 | 1,743 |
| August | 3,530 | 5,123 | 0.7 | 0.9 | 1,639 | 1,833 |
| September | 3,478 | 5,443 | 0.7 | 1.0 | 1,454 | 1,901 |
| October | 3,535 | 4,452 | 0.6 | 0.8 | 1,288 | 1,641 |
| November | 5,329 | 5,598 | 0.7 | 0.8 | 1,177 | 1,630 |
| December | 11,354 | 5,923 | 1.1 | 1.0 | 1,510 | 1,661 |

*These series have been adjusted to First Quarter 1987 benchmarks.

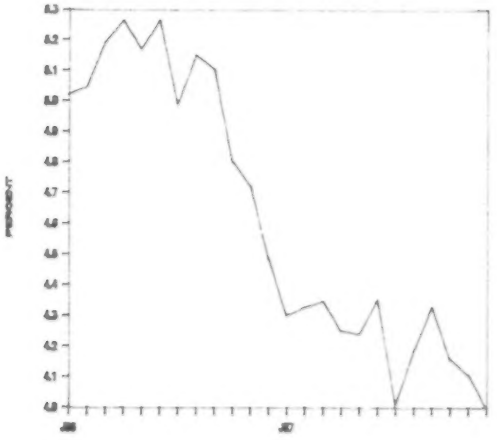
NONAG W & S EMPLOYMENT



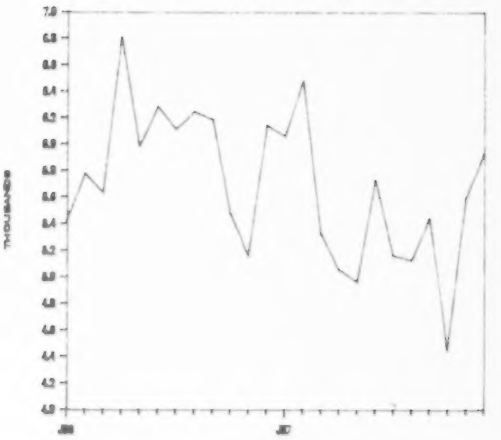
MANUFACTURING EMPLOYMENT



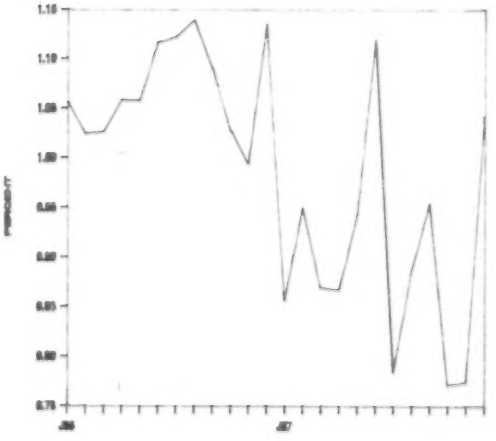
TOTAL UNEMPLOYMENT RATE



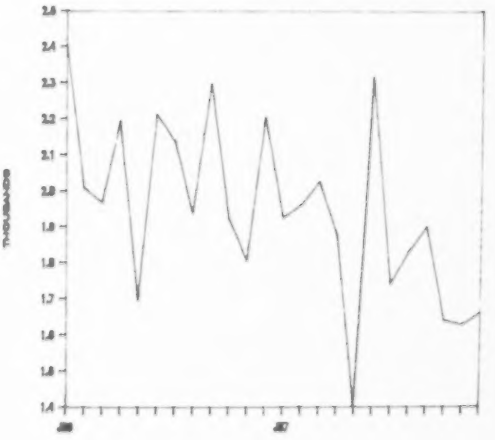
AVG. WEEKLY INITIAL CLAIMS



INSURED UNEMPLOYMENT RATE



U.I. FINAL PAYMENTS



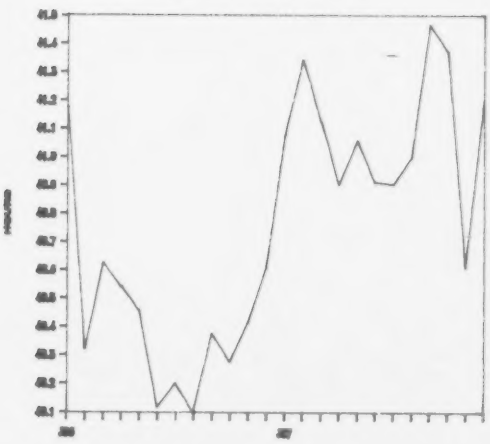
MANUFACTURING PRODUCTION WORKER INDICATORS
January 1986 to December 1987

| | Average Weekly Hours* (Hours) | | Average Manhours* (Thousands) | |
|---|---|---|---|---|
| 1986 | Unadj. | Adj. | Unadj. | Adj. |
| January | 40.6 | 41.2 | 12,867.4 | 13,130.0 |
| February | 39.6 | 40.3 | 12,604.7 | 12,901.4 |
| March | 40.3 | 40.6 | 12,753.6 | 12,947.8 |
| April | 40.3 | 40.5 | 12,794.0 | 12,949.4 |
| May | 40.5 | 40.5 | 12,842.7 | 12,907.2 |
| June | 40.4 | 40.1 | 12,844.2 | 12,691.9 |
| July | 40.0 | 40.2 | 12,692.8 | 12,795.2 |
| August | 40.1 | 40.1 | 12,864.6 | 12,851.7 |
| September | 40.7 | 40.4 | 13,135.2 | 12,902.9 |
| October | 40.4 | 40.3 | 13,080.9 | 12,951.4 |
| November | 40.9 | 40.4 | 13,289.8 | 13,042.0 |
| December | 41.3 | 40.6 | 13,379.4 | 13,129.9 |
| 1987 | | | | |
| January | 40.5 | 41.1 | 13,020.2 | 13,272.4 |
| February | 40.6 | 41.3 | 13,052.4 | 13,359.7 |
| March | 40.8 | 41.1 | 13,171.5 | 13,372.1 |
| April | 40.7 | 40.9 | 13,174.9 | 13,321.4 |
| May | 41.1 | 41.1 | 13,334.9 | 13,401.9 |
| June | 41.2 | 40.9 | 13,515.3 | 13,355.0 |
| July | 40.7 | 40.9 | 13,312.7 | 13,420.1 |
| August | 41.0 | 41.0 | 13,460.9 | 13,447.5 |
| September | 41.8 | 41.5 | 13,793.1 | 13,549.2 |
| October | 41.5 | 41.4 | 13,676.6 | 13,541.2 |
| November | 41.1 | 40.6 | 13,561.5 | 13,308.6 |
| December | 41.9 | 41.2 | 13,731.4 | 13,475.4 |

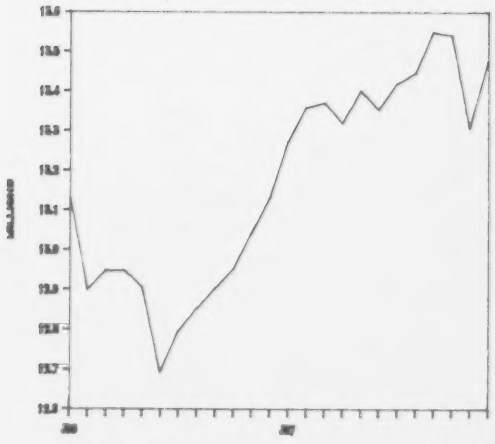
| | Average Hourly Earnings* (Dollars) | | Average Weekly Earnings* (Dollars) | |
|---|---|---|---|---|
| 1986 | Unadj. | Adj. | Unadj. | Adj. |
| January | 8.68 | 8.62 | 352.41 | 355.25 |
| February | 8.73 | 8.70 | 345.71 | 350.97 |
| March | 8.72 | 8.71 | 351.42 | 354.25 |
| April | 8.75 | 8.76 | 352.63 | 354.05 |
| May | 8.81 | 8.83 | 356.81 | 357.53 |
| June | 8.80 | 8.83 | 355.52 | 354.10 |
| July | 8.88 | 8.90 | 355.20 | 357.70 |
| August | 8.87 | 8.91 | 355.69 | 356.76 |
| September | 8.93 | 8.95 | 363.45 | 361.28 |
| October | 8.90 | 8.94 | 359.56 | 360.64 |
| November | 8.93 | 8.93 | 365.24 | 359.49 |
| December | 9.01 | 8.97 | 372.11 | 364.10 |
| 1987 | | | | |
| January | 9.05 | 8.99 | 366.53 | 369.49 |
| February | 9.07 | 9.04 | 368.24 | 373.85 |
| March | 9.07 | 9.05 | 370.06 | 373.04 |
| April | 9.04 | 9.05 | 367.93 | 369.41 |
| May | 9.03 | 9.05 | 371.13 | 371.87 |
| June | 9.16 | 9.19 | 377.39 | 375.89 |
| July | 9.16 | 9.18 | 372.81 | 375.44 |
| August | 9.14 | 9.18 | 374.74 | 375.87 |
| September | 9.30 | 9.32 | 388.74 | 386.81 |
| October | 9.22 | 9.26 | 382.63 | 383.78 |
| November | 9.27 | 9.27 | 381.00 | 375.00 |
| December | 9.31 | 9.26 | 390.09 | 381.69 |

*These series have been adjusted to First Quarter 1987 benchmarks.

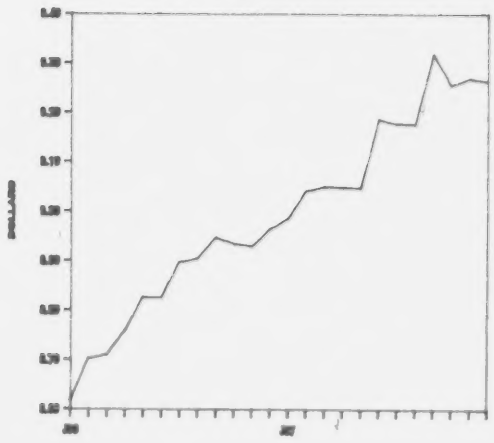
AVERAGE WEEKLY HOURS



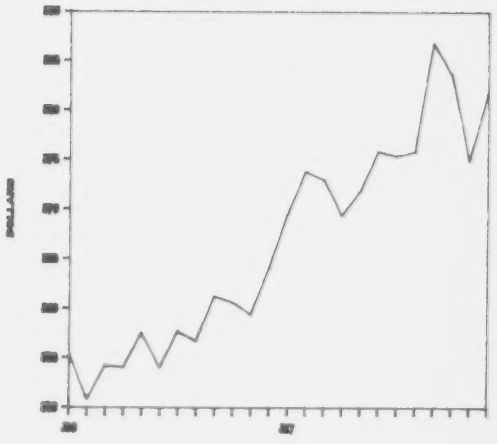
AVERAGE MANHOURS



AVERAGE HOURLY EARNINGS



AVERAGE WEEKLY EARNINGS

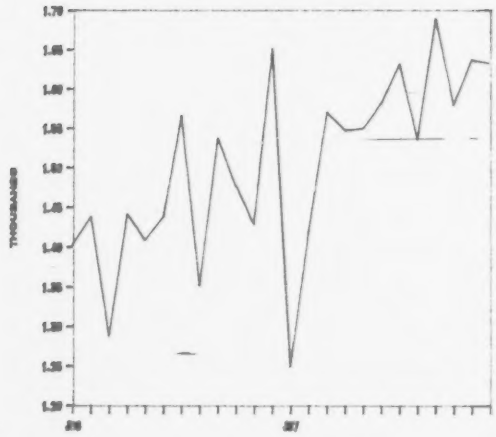


BUSINESS INDICATORS
January 1986 to December 1987

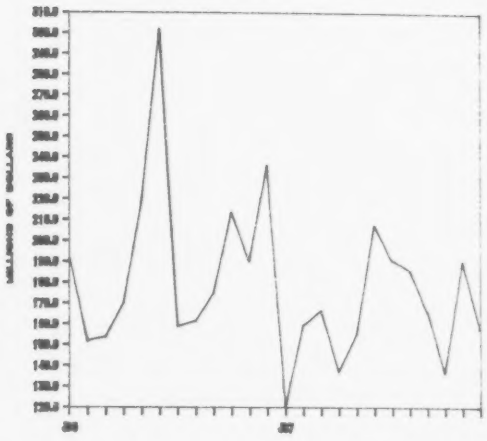
| | New Business Incorporations (Number) | | Valuation of Bldg. Permits ($ Millions) | | New Vehicle Registrations (Number) | |
|---|---|---|---|---|---|---|
| 1986 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 1,391 | 1,405 | 175.3 | 191.2 | 39,473 | 40,568 |
| February | 1,469 | 1,439 | 117.8 | 152.0 | 31,677 | 36,706 |
| March | 1,401 | 1,289 | 180.3 | 153.8 | 38,739 | 35,803 |
| April | 1,579 | 1,442 | 194.3 | 170.0 | 41,469 | 37,837 |
| May | 1,438 | 1,410 | 230.2 | 218.4 | 42,820 | 37,827 |
| June | 1,445 | 1,439 | 374.5 | 301.8 | 45,992 | 39,580 |
| July | 1,554 | 1,567 | 159.8 | 158.8 | 43,297 | 39,325 |
| August | 1,358 | 1,353 | 160.0 | 161.6 | 40,420 | 39,205 |
| September | 1,387 | 1,538 | 157.0 | 174.6 | 49,358 | 47,097 |
| October | 1,483 | 1,477 | 230.7 | 213.6 | 45,978 | 46,678 |
| November | 1,255 | 1,429 | 173.2 | 190.1 | 28,768 | 35,342 |
| December | 1,656 | 1,651 | 190.0 | 236.3 | 36,777 | 51,726 |
| 1987 | | | | | | |
| January | 1,237 | 1,249 | 111.8 | 120.3 | 41,798 | 42,958 |
| February | 1,453 | 1,419 | 123.4 | 159.6 | 28,975 | 33,575 |
| March | 1,707 | 1,570 | 195.0 | 166.7 | 41,798 | 38,810 |
| April | 1,694 | 1,548 | 157.4 | 137.3 | 43,113 | 39,445 |
| May | 1,582 | 1,551 | 165.1 | 155.3 | 39,956 | 35,204 |
| June | 1,584 | 1,582 | 258.0 | 207.7 | 47,997 | 41,412 |
| July | 1,624 | 1,632 | 190.1 | 190.9 | 46,707 | 42,345 |
| August | 1,541 | 1,536 | 185.2 | 186.1 | 41,958 | 40,776 |
| September | 1,519 | 1,690 | 148.5 | 166.3 | 42,661 | 40,591 |
| October | 1,593 | 1,580 | 148.5 | 136.9 | 36,593 | 36,925 |
| November | 1,436 | 1,637 | 171.4 | 190.4 | 31,180 | 38,541 |
| December | 1,638 | 1,633 | 127.8 | 158.4 | 29,350 | 41,396 |

| | Electrical Power Sales (Mil. of KWH) | | Taxable Retail Sales ($ Millions) | |
|---|---|---|---|---|
| 1986 | Unadj. | Adj. | Unadj. | Adj. |
| January | 4,062.3 | 3,436.8 | 2,144.1 | 2,425.5 |
| February | 3,851.7 | 3,476.3 | 2,942.0 | 3,428.9 |
| March | 3,654.2 | 3,593.1 | 2,958.5 | 3,127.4 |
| April | 3,083.0 | 3,362.1 | 2,826.4 | 2,913.8 |
| May | 2,918.1 | 3,465.7 | 3,482.3 | 3,221.4 |
| June | 3,460.5 | 3,600.9 | 3,161.5 | 3,171.0 |
| July | 4,065.7 | 3,782.0 | 2,993.0 | 3,029.4 |
| August | 4,078.7 | 3,677.8 | 3,291.6 | 3,275.2 |
| September | 3,386.8 | 3,222.5 | 3,028.5 | 3,096.6 |
| October | 3,286.4 | 3,755.9 | 2,787.4 | 2,711.5 |
| November | 3,198.7 | 3,693.6 | 3,349.7 | 3,268.0 |
| December | 3,688.6 | 3,710.9 | 3,582.1 | 2,891.1 |
| 1987 | | | | |
| January | 4,142.9 | 3,510.9 | 2,388.1 | 2,704.5 |
| February | 4,221.3 | 3,809.8 | 3,569.4 | 4,169.9 |
| March | 3,879.1 | 3,810.5 | 2,985.7 | 3,152.8 |
| April | 3,381.9 | 3,692.0 | 3,109.4 | 3,208.9 |
| May | 3,177.8 | 3,769.6 | 3,472.1 | 3,209.0 |
| June | 3,756.6 | 3,900.9 | 3,579.4 | 3,590.2 |
| July | 4,237.3 | 3,941.7 | 3,352.7 | 3,403.8 |
| August | 4,511.6 | 4,071.8 | 3,082.5 | 3,061.1 |
| September | 3,972.2 | 3,779.4 | 3,658.5 | 3,748.5 |
| October | 3,396.8 | 3,882.1 | 3,123.3 | 3,035.3 |
| November | 3,326.4 | 3,845.5 | 3,583.5 | 3,496.1 |
| December | 3,929.5 | 3,957.2 | 3,861.0 | 3,118.7 |

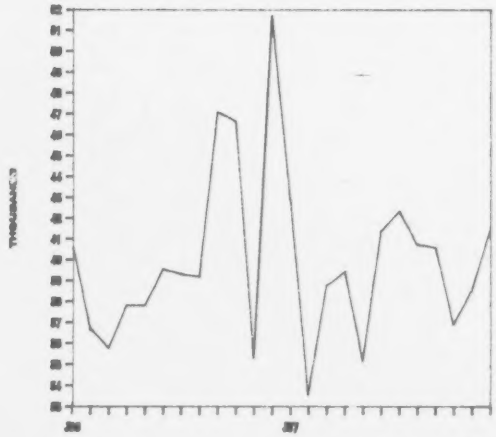
NEW BUSINESS INCORPORATIONS



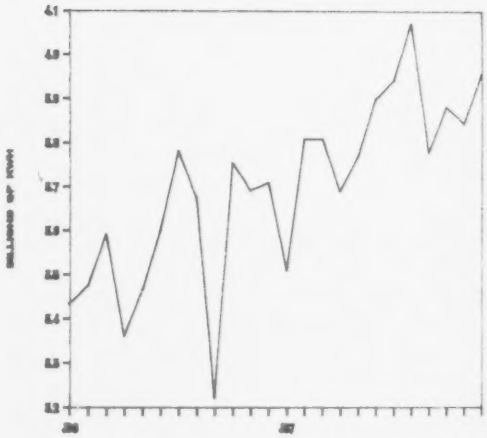
VALUATION OF BUILDING PERMITS



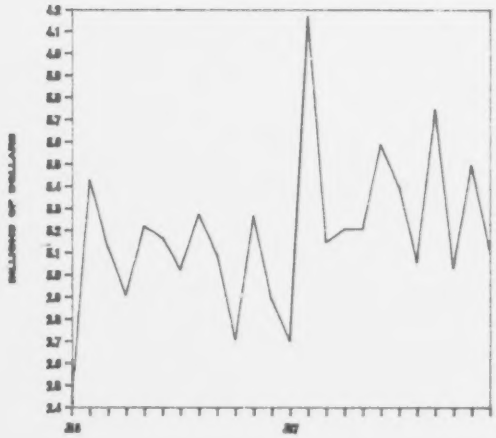
NEW VEHICLE REGISTRATIONS



ELECTRICAL POWER SALES



TAXABLE RETAIL SALES



DATA SUMMARY
DECEMBER 1987
(SEASONALLY ADJUSTED DATA)

| | Dec. 1987 | Nov. 1987 | Dec. 1986 | Percent & (Direction) of Change 1/ Nov. '87 Dec. '87 | Dec. '86- Dec. '87 |
|---|---|---|---|---|---|
| EMPLOYMENT | | | | | |
| *Nonagricultural Wage & Salary Employment (000) | 2,722.9 | 2,714.7 | 2,613.2 | 0.3 (+) | 4.2 (+) |
| *Manufacturing Employment (000) | 429.7 | 429.9 | 426.5 | 0.0 (-) | 0.8 (+) |
| UNEMPLOYMENT | | | | | |
| *Total Unemployment Rate (%) | 4.0 | 4.1 | 4.5 | xxx (+) | xxx (+) |
| Average Weekly Initial Claims | 5,923 | 5,598 | 6,143 | 5.8 (-) | - 3.6 (+) |
| Average Weekly Insured Unemployment Rate (%) | 1.0 | 0.8 | 1.1 | xxx (-) | xxx (+) |
| Unemployment Insurance Final Payments | 1,661 | 1,630 | 2,205 | 1.9 (-) | -24.7 (+) |
| MANUFACTURING PRODUCTION WORKERS | | | | | |
| *Average Weekly Hours | 41.2 | 40.6 | 40.6 | 1.5 (+) | 1.5 (+) |
| *Average Manhours (000) | 13,475.4 | 13,308.6 | 13,129.9 | 1.3 (+) | 2.6 (+) |
| *Average Hourly Earnings ($) | 9.26 | 9.27 | 8.97 | - 0.1 (-) | 3.2 (+) |
| *Average Weekly Earnings ($) | 381.69 | 375.00 | 364.10 | 1.8 (+) | 4.8 (+) |
| BUSINESS | | | | | |
| New Business Incorporations | 1,633 | 1,637 | 1,651 | - 0.2 (-) | - 1.1 (-) |
| Valuation of Building Permits -18 Cities ($M) | 158.4 | 190.4 | 236.3 | -16.8 (-) | -33.0 (-) |
| New Vehicle Registrations | 41,396 | 38,541 | 51,726 | 7.4 (+) | -20.0 (-) |
| Electrical Power Sales (M of KWH) | 3,957.2 | 3,845.5 | 3,710.9 | 2.9 (+) | 6.6 (+) |
| Taxable Retail Sales ($M) | 3,118.7 | 3,496.1 | 2,891.1 | -10.8 (-) | 7.9 (+) |

1/ + = Favorable, - = Not Favorable, 0 = No Change (less than .05%)
* Revised to First Quarter 1987 benchmarks

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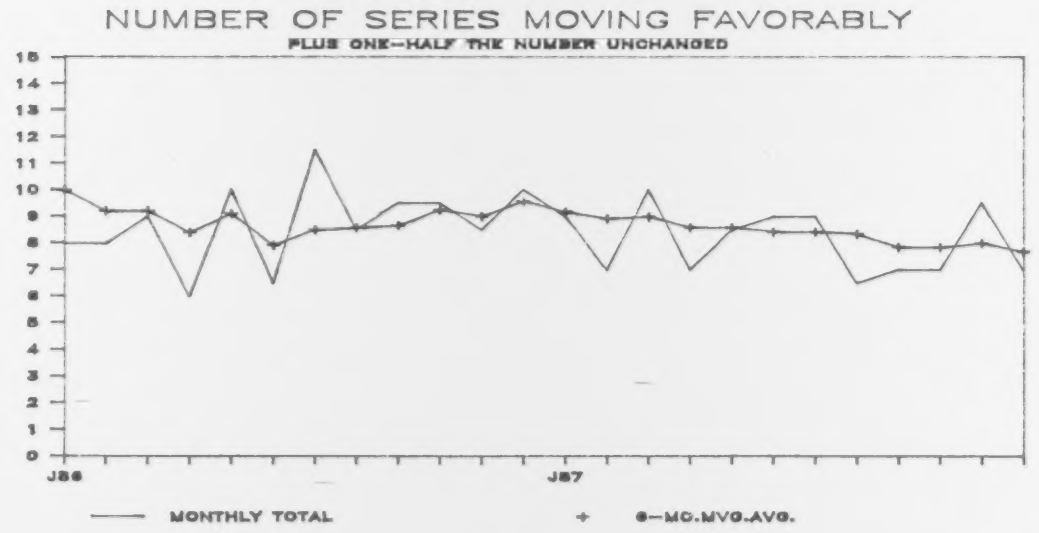
SUMMARY



| DATA SUMMARY<br>NOVEMBER 1987<br>(SEASONALLY ADJUSTED DATA) | Nov. 1987 | Oct. 1987 | Nov. 1986 | Percent & (Direction) of Change 1/<br>Oct. '87 Nov. '87 | <br>Dec. '86- Dec. '87 |
|---|---|---|---|---|---|
| EMPLOYMENT | | | | | |
| *Nonagricultural Wage & Salary Employment (000) | 2,714.7 | 2,700.0 | 2,607.7 | 0.5 (+) | 4.1 (+) |
| *Manufacturing Employment (000) | 429.9 | 429.3 | 426.0 | 0.1 (+) | 0.9 (+) |
| UNEMPLOYMENT | | | | | |
| *Total Unemployment Rate (%) | 4.1 | 4.2 | 4.7 | xxx (+) | xxx (+) |
| Average Weekly Initial Claims | 5,598 | 4,452 | 5,162 | 25.7 (-) | 8.4 (-) |
| Average Weekly Insured Unemployment Rate (%) | 0.8 | 0.8 | 1.0 | xxx (0) | xxx (+) |
| Unemployment Insurance Final Payments | 1,630 | 1,641 | 1,809 | - 0.7 (+) | - 9.9 (+) |
| MANUFACTURING PRODUCTION WORKERS | | | | | |
| *Average Weekly Hours | 40.6 | 41.4 | 40.4 | - 1.9 (-) | 0.5 (+) |
| *Average Manhours (000) | 13,308.6 | 13,541.2 | 13,042.0 | - 1.7 (-) | 2.0 (+) |
| *Average Hourly Earnings ($) | 9.27 | 9.26 | 8.93 | 0.1 (+) | 3.8 (+) |
| *Average Weekly Earnings ($) | 375.00 | 383.78 | 359.49 | - 2.3 (-) | 4.3 (+) |
| BUSINESS | | | | | |
| New Business Incorporations | 1,637 | 1,580 | 1,429 | 3.6 (+) | 14.6 (+) |
| Valuation of Building Permits -18 Cities ($M) | 190.4 | 136.9 | 190.1 | 39.1 (+) | 0.2 (+) |
| New Vehicle Registrations | 38,541 | 36,925 | 35,342 | 4.4 (+) | 9.1 (+) |
| Electrical Power Sales (M of KWH) | 3,845.5 | 3,882.1 | 3,693.6 | - 0.9 (-) | 4.1 (+) |
| Taxable Retail Sales ($M) | 3,496.1 | 3,035.3 | 3,268.0 | 15.2 (+) | 7.0 (+) |

| DATA SUMMARY<br>OCTOBER 1987.<br>(SEASONALLY ADJUSTED DATA) | Oct. 1987 | Sep. 1987 | Oct. 1986 | Percent & (Direction) of Change 1/<br>Sep. Oct. '87 | <br>Oct. '86- Oct. '87 |
|---|---|---|---|---|---|
| EMPLOYMENT | | | | | |
| *Nonagricultural Wage & Salary Employment (000) | 2,700.0 | 2,686.0 | 2,595.2 | 0.5 (+) | 4.0 (+) |
| *Manufacturing Employment (000) | 429.3 | 428.7 | 425.8 | 0.1 (+) | 0.8 (+) |
| UNEMPLOYMENT | | | | | |
| *Total Unemployment Rate (%) | 4.2 | 4.3 | 4.8 | xxx (+) | xxx (+) |
| Average Weekly Initial Claims | 4,452 | 5,443 | 5,478 | -18.2 (+) | -18.7 (+) |
| Average Weekly Insured Unemployment Rate (%) | 0.8 | 1.0 | 1.0 | xxx (+) | xxx (+) |
| Unemployment Insurance Final Payments | 1,641 | 1,901 | 1,923 | -13.7 (+) | -14.7 (+) |
| MANUFACTURING PRODUCTION WORKERS | | | | | |
| *Average Weekly Hours | 41.4 | 41.5 | 40.3 | - 0.2 (-) | 2.7 (+) |
| *Average Manhours (000) | 13,541.2 | 13,549.2 | 12,951.4 | - 0.1 (-) | 4.6 (+) |
| *Average Hourly Earnings ($) | 9.26 | 9.32 | 8.94 | - 0.6 (-) | 3.6 (+) |
| *Average Weekly Earnings ($) | 383.78 | 386.81 | 360.64 | - 0.8 (-) | 6.4 (+) |
| BUSINESS | | | | | |
| New Business Incorporations | 1,580 | 1,690 | 1,477 | - 6.5 (-) | 7.0 (+) |
| Valuation of Building Permits -18 Cities ($M) | 136.9 | 166.3 | 213.6 | -17.7 (-) | -35.9 (-) |
| New Vehicle Registrations | 36,925 | 40,591 | 46,678 | - 9.0 (-) | -20.9 (-) |
| Electrical Power Sales (M of KWH) | 3,882.1 | 3,779.4 | 3,755.9 | 2.7 (+) | 3.4 (+) |
| Taxable Retail Sales ($M) | 3,035.3 | 3,748.5 | 2,711.5 | -19.0 (-) | 11.9 (+) |

1/ + = Favorable, - = Not Favorable, 0 = No Change (less than .05%)
* Revised to First Quarter 1987 benchmarks

## THE VIRGINIA LEADING AND COINCIDENT INDEXES

| 1986 | Leading Index (1977=100) | Monthly Percent Change | Quarterly Percent Change | Coincident Index (1977=100) | Monthly Percent Change | Quarterly Percent Change |
|---|---|---|---|---|---|---|
| January | 153.0 | +1.5 | - | 130.8 | -1.0 | - |
| February | 153.6 | +0.4 | +3.5 | 131.5 | +0.5 | -0.0 |
| March | 154.2 | +0.4 | - | 132.9 | +1.1 | - |
| April | 153.6 | -0.4 | - | 133.3 | +0.2 | - |
| May | 154.6 | +0.7 | +0.4 | 134.9 | +0.8 | +2.0 |
| June | 154.2 | -0.3 | - | 135.7 | +1.0 | - |
| July | 154.9 | +0.5 | - | 137.4 | +1.2 | - |
| August | 154.8 | -0.1 | +0.8 | 137.7 | +0.2 | +2.4 |
| September | 156.2 | +0.9 | - | 137.8 | +0.1 | - |
| October | 157.1 | +0.6 | - | 138.3 | +0.4 | - |
| November | 158.0 | +0.5 | +1.8 | 139.0 | +0.5 | +0.8 |
| December | 159.4 | +0.9 | - | 138.8 | -0.2 | - |
| 1987 | | | | | | |
| January | 158.5 | -0.5 | - | 139.0 | +0.2 | - |
| February | 158.9 | +0.2 | +0.7 | 141.1 | +1.5 | +1.4 |
| March | 160.3 | +0.9 | - | 141.7 | +0.4 | - |
| April | 161.0 | +0.4 | - | 142.5 | +0.6 | - |
| May | 162.6 | +1.0 | +1.7 | 142.5 | 0.0 | +1.8 |
| June | 162.4 | -0.2 | - | 144.3 | +1.2 | - |
| July | 164.3 | +1.2 | - | 145.8 | +1.1 | - |
| August | 165.3 | +0.6 | +2.1 | 143.5 | -1.6 | +1.0 |
| September | 166.6 | +0.8 | - | 144.2 | +0.5 | - |
| October | 167.5 | +0.5 | - | 144.0 | -0.1 | - |
| November | 168.3 | +0.5 | +1.6 | 144.8 | +0.6 | -0.2 |
| December | 168.1 | -0.1 | - | 143.8 | -0.7 | - |

Leading Index Components: Average Weekly Hours for Production Workers, 5-month moving average; New Businesses, 6-month moving average; Building Permits, deflated to 1982 dollars, 6-month moving average; Average Weekly Initial Claims, 3-month moving average.

Coincident Index Components: Personal Income less Transfer Payments, deflated to 1982 dollars; Industrial Production Index; Nonagricultural Wage and Salary Employment; Taxable Retail Sales, deflated to 1967 dollars by the consumer price index, 6-month moving average.

Note: All components are seasonally adjusted.

Sources: Personal Income, U. S. Department of Commerce, Wharton Econometrics (most recent quarter); Industrial Production Index, Wharton Econometrics.

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The Virginia leading index increased in Fourth Quarter 1987, while the Virginia coincident index declined. The State's leading index, which advanced 1.6 percent, outperformed its national counterpart, which decreased 0.4 percent. Virginia's coincident index fell 0.2 percent, while the national coincident indicator rose 1.6 percent.

During the quarter, the leading index drew strength from various components. The decline in average weeks claimed combined with the growth in new businesses provided the impetus in October, while building permits and new businesses were especially strong in November. The December decline in the leading index stemmed from the decrease in building permits and the continued increase in average weeks claimed. Among the coincident index components, personal income less transfer payments, the industrial production index, and nonagricultural wage and salary employment posted gains each month. Despite these gains, the coincident index declined in October and December reflecting the decrease in taxable retail sales.

Below are estimates of State personal income through Fourth Quarter 1987.

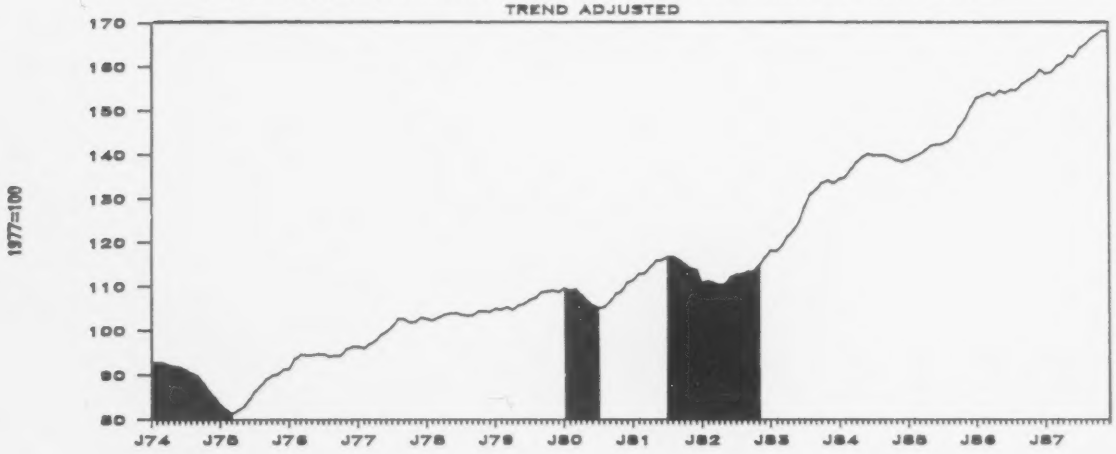
| 1987 | Total Personal Income Millions | Transfer Payments Millions | Real Personal Income (82$) Millions | Transfer Payments (82$) Millions |
|---|---|---|---|---|
| 1st Qtr | $93,610 | $12,110 | $80,080 | $10,360 |
| 2nd Qtr | 94,850 | 12,300 | 80,180 | 10,398 |
| 3rd Qtr | 95,290 | 12,360 | 79,870 | 10,360 |
| 4th Qtr (Projected) | 96,670 | 12,490 | 80,250 | 10,368 |

Source: Bureau of Economic Analysis, U. S. Department of Commerce.
Note: All personal income data reflects seasonally adjusted annual rates.

Ann D. Lang

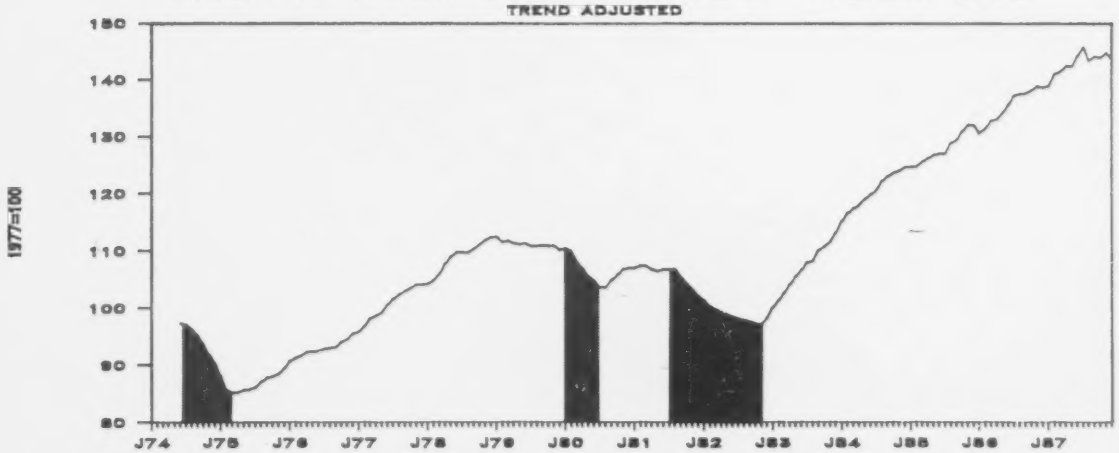
## VIRGINIA INDEX OF LEADING INDICATORS

TREND ADJUSTED




## VIRGINIA INDEX OF COINCIDENT INDICATORS

TREND ADJUSTED



# A REVIEW OF NONAGRICULTURAL EMPLOYMENT'S PERFORMANCE IN VIRGINIA IN 1987 AND SUMMARY EMPLOYMENT FORECASTS FOR 1988-1990

## 1987 in Review

Nonagricultural wage and salary employment, one of the 15 series used regularly in this publication to measure the Virginia economy, is annually revised to new benchmarks (unemployment compensation employer tax records) in the first quarter of the calendar year. The accompanying table on page 13 shows a comparison of revised 1987 nonfarm annual averages on the new benchmark basis to the 1986 nonfarm averages. The benchmark revisions show nonagricultural employment in 1987 grew by 4.7 percent or an impressive 120,400 increase in the number of new jobs for Virginians. This was much faster than preliminary estimates which showed a 3.0 percent growth rate, attesting to the robust health of Virginia economy. By contrast, the U. S. nonfarm sector grew by only 2.5 percent in 1987.

Seven of the eight major employing divisions--manufacturing, construction, transportation, trade, finance, services, and government--reached never-before-attained high levels at some point during 1987. All divisions but mining had annual averages for 1987 that were above all previous recorded annual averages. Of the major divisions, finance employment had the largest percentage increase over last year, being up 9.2 percent. Much of the financial growth was in the real estate (+9.5 percent) sector as the booming housing market continued, but significant gains were also recorded at insurance carriers (+6.3 percent) and banks (+5.4 percent). Explosive growth in business and computer services (+13.2 percent) as well as steady expansions in personnel and health services and tourism made overall services, up 8.1 percent, the second fastest growing major employing division. In the actual number of new jobs created last year, this division was the fastest grower with 47,100 new positions created. Construction continued to boom with a 7.4 percent gain and 12,500 new jobs. Wholesale and retail trade grew all year with an annual average increase of 5.4 percent or 31,400 jobs. Good growth was again recorded in air transportation, trucking and warehousing, and at utilities, and this boosted the transportation and public utilities group ahead by 3.7 percent. Government employment in Virginia increased annually by 1.6 percent in 1987 with modest gains in both the federal and state-local sectors.

The factory employment division advanced by 1.0 percent or 4,400 jobs in 1987 as a falling U. S. dollar made Virginia-made goods more competitive in both the domestic and world markets. (Regular Virginia Economic Indicators readers will recall that we accurately portrayed this manufacturing resurgence in a featured article "Dollar Depreciation and Employment in Virginia: A Mixed Blessing," which appeared in the Fourth Quarter 1985 edition). Most of the dollar depreciation induced employment gains were in nondurables (+1.8 percent or 4,100 jobs). Textiles, especially knit goods, was the main benefactor with employment being up 4.9 percent or 2,100. This increase was enough to restore textiles in 1987 to its position as Virginia's largest factory employing sector, a position it had lost to transportation equipment in 1986. Other industries also benefiting from the weaker dollar were plastics (+11.5 percent or 1,100 jobs) and chemicals (+2.4 percent or 800 jobs). Other noteworthy nondurable gainers in 1987 were printing and publishing (+3.2 percent or 1,000 jobs) and foods (+2.1 percent or 800 jobs). Durable goods had a net increase of only 0.1 percent or 200 jobs because of cutbacks early in the year in the shipbuilding portion of transportation equipment. Although transportation equipment turned around after May, this was not enough to offset the earlier losses, and the industry finished the year down 2,000 or 4.5 percent, relinquishing its position as the largest factory segment. The booming housing market boosted lumber and wood by 6.2 percent and stone-clay-glass by 3.3 percent. Electric equipment grew by 4.5 percent in spite of several plant closings. The remaining durable goods gains and losses were minor.

Mining, the only major employment division to experience a loss in 1987, was down 5.5 percent or 900. Weakened demand was a problem although coal production did better the 1986 level by the waning months of the year.

## Summary Forecasts for 1988-1990

The latest forecasts for Virginia project a gradual slowing in employment expansions after 1987, but the State nonfarm sector should continue to attain new heights with growth of about 3.0 percent in 1988. Positive factors should be further manufacturing gains from the weak U. S. dollar and continued strong growth in trade and service components. Trade and services should account for close to 80 percent of the 1988 nonfarm gain. Other strong nonfactory gainers are projected to be finance and transportation. Construction should still see a slight increase in its job level in 1988.

A general slowing in the U. S. economy after the 1988 elections is projected as a new administration grapples with deficits and the balance of payments windfall winds down. This should slow nonfarm growth in Virginia to about 2.0 percent in 1989 and close to 1.0 percent in 1990. Services and finance should be the fastest growers. Construction employment, likely, will level out, but at a high level by past standards, and manufacturers may see a slight retrenchment by 1990. Growth should be re-emerging toward the end of 1990.

William F. Mezger

EMPLOYMENT IN NONAGRICULTURAL INDUSTRIES IN VIRGINIA
ANNUAL AVERAGES (In Thousands)
Revised to First Quarter 1987 Benchmarks

| | 1987 | 1986 | Change 1986-1987 | % Change 1986-1987 |
|---|---|---|---|---|
| TOTAL NONAGRICULTURAL | 2,678.1 | 2,557.7 | +120.4 | + 4.7 |
| MANUFACTURING | 429.1 | 424.7 | + 4.4 | + 1.0 |
| Durable Goods | 201.5 | 201.3 | + 0.2 | + 0.1 |
| Lumber & Wood Products | 25.6 | 24.1 | + 1.5 | + 6.2 |
| Furniture & Fixtures | 24.8 | 24.8 | + 0.0 | + 0.0 |
| Stone, Clay, & Glass Products | 15.8 | 15.3 | + 0.5 | + 3.3 |
| Primary Metal Industries | 10.6 | 10.6 | + 0.0 | + 0.0 |
| Fabricated Metal Products | 18.5 | 18.9 | - 0.4 | - 2.1 |
| Machinery (except Electrical) | 16.2 | 15.5 | + 0.7 | + 4.5 |
| Electric & Electronic Equipment | 39.7 | 40.2 | - 0.5 | - 1.2 |
| Transportation Equipment | 42.1 | 44.1 | - 2.0 | - 4.5 |
| Instruments & Related Products | 4.8 | 4.7 | + 0.1 | + 2.1 |
| Misc. Manufacturing Industries | 3.4 | 3.2 | + 0.2 | + 6.3 |
| Nondurable Goods | 227.5 | 223.4 | + 4.1 | + 1.8 |
| Food & Kindred Products | 39.0 | 38.2 | + 0.8 | + 2.1 |
| Tobacco Manufactures | 13.7 | 14.0 | - 0.3 | - 2.1 |
| Textile Mill Products | 44.6 | 42.5 | + 2.1 | + 4.9 |
| Apparel & Other Textile Products | 29.7 | 30.6 | - 0.9 | - 2.9 |
| Paper | 15.8 | 15.5 | + 0.3 | + 1.9 |
| Printing & Publishing | 32.5 | 31.5 | + 1.0 | + 3.2 |
| Chemicals & Allied Products | 33.6 | 32.8 | + 0.8 | + 2.4 |
| Petroleum, Rubber & Misc. Plastics Products | 17.0 | 17.6 | - 0.6 | - 3.4 |
| | 10.7 | 9.6 | + 1.1 | +11.5 |
| Leather & Leather Products | 1.7 | 2.4 | - 0.7 | -29.2 |
| MINING | 15.6 | 16.5 | - 0.9 | - 5.5 |
| CONSTRUCTION | 182.0 | 169.5 | + 12.5 | + 7.4 |
| TRANSPORTATION & PUBLIC UTILITIES | 142.2 | 137.1 | + 5.1 | + 3.7 |
| Railroad Transportation | 10.7 | 11.5 | - 0.8 | - 7.0 |
| Trucking & Warehousing | 34.0 | 31.9 | + 2.1 | + 6.6 |
| Transportation by Air | 20.3 | 18.9 | + 1.4 | + 7.4 |
| Communication | 40.4 | 39.5 | + 0.9 | + 2.3 |
| Electric, Gas, & Sanitary Service | 20.9 | 20.3 | + 0.6 | + 3.0 |
| WHOLESALE & RETAIL TRADE | 610.4 | 579.0 | + 31.4 | + 5.4 |
| Wholesale Trade | 127.8 | 122.6 | + 5.2 | + 4.2 |
| Retail Trade | 482.6 | 456.4 | + 26.2 | + 5.7 |
| FINANCE, INSURANCE, & REAL ESTATE | 143.9 | 131.8 | + 12.1 | + 9.2 |
| Banking | 37.1 | 35.2 | + 1.9 | + 5.4 |
| Insurance Carriers | 25.2 | 23.7 | + 1.5 | + 6.3 |
| Real Estate | 35.9 | 32.8 | + 3.1 | + 9.5 |
| SERVICES | 626.4 | 579.3 | + 47.1 | + 8.1 |
| Personnel Services | 33.1 | 31.3 | + 1.8 | + 5.8 |
| Business Services | 170.5 | 150.6 | + 19.9 | +13.2 |
| Health Services | 140.0 | 133.0 | + 7.0 | + 5.3 |
| GOVERNMENT | 528.4 | 519.9 | + 8.5 | + 1.6 |
| Federal Government | 170.0 | 167.9 | + 2.1 | + 1.3 |
| State & Local Government | 358.4 | 351.9 | + 6.5 | + 1.8 |

# HISTORICAL SUMMARY

## Performance of Indicators Over the Business Cycle

## GENERAL INFORMATION

For those interested in studying the business cycle in Virginia, this publication includes several of the economic time series for which data is readily available on a monthly basis. From time to time, new series will be added and, if necessary, others presently included will be discontinued.

### BUSINESS CYCLE TURNING POINTS

The shaded spaces on the charts represent the 1973-75, 1980, and 1981-82 recessions as designated by the National Bureau of Economic Research (NBER). The beginning of a recession is defined as the month when aggregate economic activity in the U. S. reaches a cyclical high, from which it begins to turn down, and the end as the month when it reaches a cyclical low, from which it begins to turn up. According to NBER, the 1973-75 recession began in November 1973 and ended in March 1975, the 1980 recession began in January 1980 and ended in July 1980, and the 1981-82 recession began in July 1981 and ended in November 1982.

### SEASONAL ADJUSTMENT

To correlate changes in a time series and changes in the business cycle it is desirable

### SEASONAL ADJUSTMENT (continued)

to eliminate, insofar as possible, the effect of irrelevant factors from the data comprising the series. All series currently published in Indicators have been adjusted to minimize regular seasonal fluctuations in the data in order to show only activity related to the business cycle.

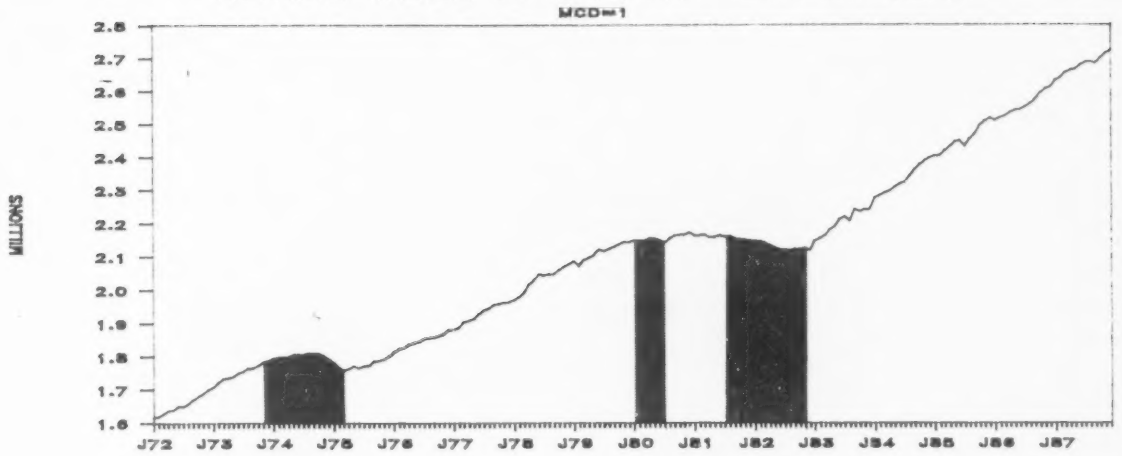
### MONTHS FOR CYCLICAL DOMINANCE (MCD)

After seasonal adjustment there often remains a significant degree of purely random change, the effect of which can be minimized with a moving average equal in length to the MCD of the series. The MCD is an estimate of the length of the moving average which will reveal the cyclical pattern among the welter of random fluctuations in the data--the greater the MCD the more random and less cyclically significant are monthly changes in the series. Where noted, charts of historical data in this publication represent seasonally adjusted figures which have been averaged according to the MCD of each series.

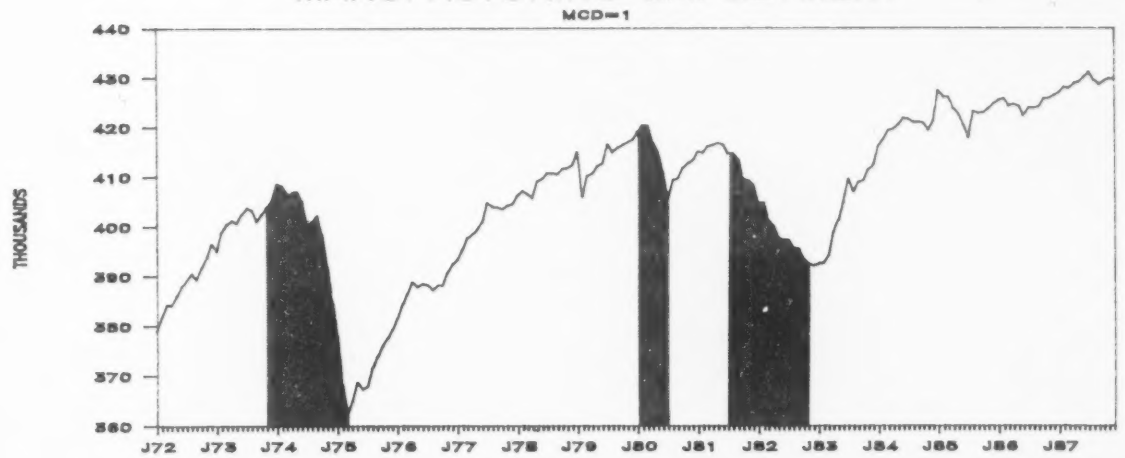
## DATA SOURCES

| | |
|---|---|
| Nonagricultural Wage and Salary Employment | Virginia Employment Commission (VEC) |
| Manufacturing Employment | VEC |
| Total Unemployment Rate | VEC |
| Average Weekly initial Claims | VEC |
| Insured Unemployment Rate | VEC |
| Unemployment Insurance Final Payments | VEC |
| Average Manhours | VEC |
| Average Hourly Earnings | VEC |
| Average Weekly Earnings | VEC |
| Average Workweek | VEC |
| New Business Incorporations | Virginia State Corporation Commission |
| Valuation of Building Permits - 18 Cities | Local Building Inspectors |
| New Vehicle Registrations | Virginia State Division of Motor Vehicles |
| Electrical Power Sales | Virginia Power, Appalachian Power Co., Delmarva Electric Co., Tennessee Power Company |
| Taxable Retail Sales | Virginia State Department of Taxation |
| Taxable Retail Sales/CPI | Virginia State Department of Taxation |

## NONAG WAGE & SALARY EMPLOYMENT



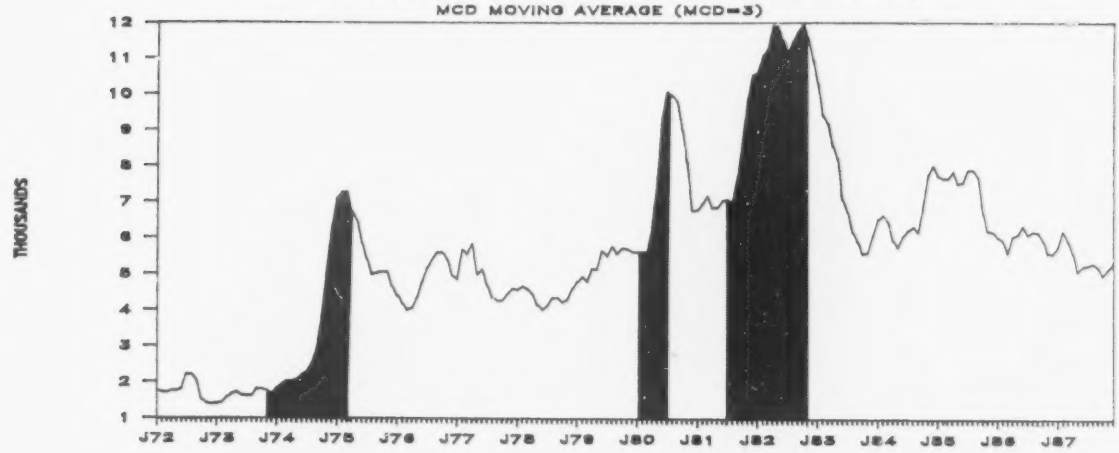

## MANUFACTURING EMPLOYMENT




## TOTAL UNEMPLOYMENT RATE

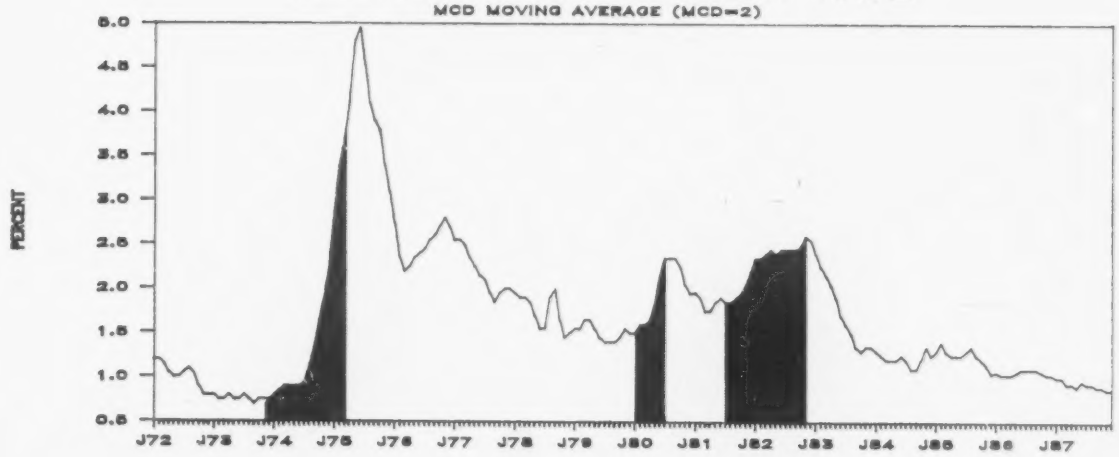
## AVERAGE WEEKLY INITIAL CLAIMS

MCD MOVING AVERAGE (MCD=3)



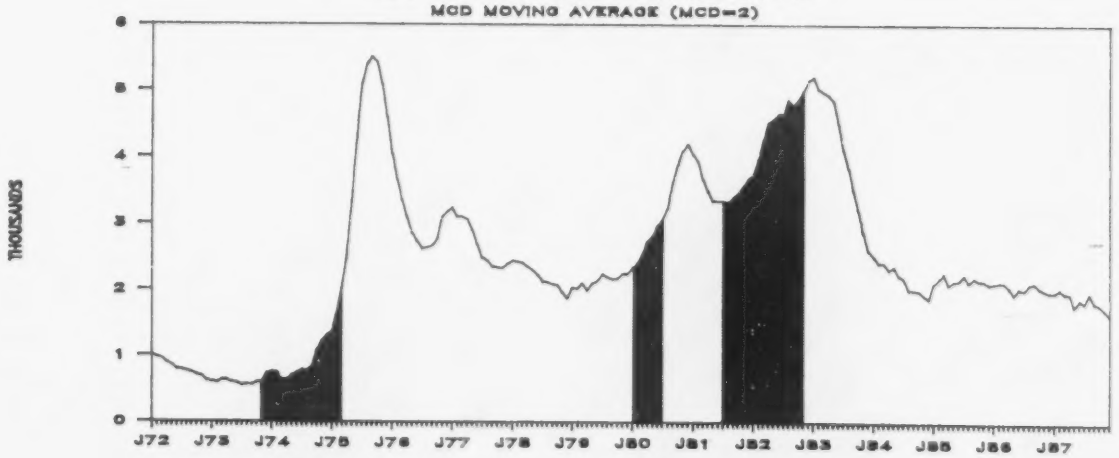

## INSURED UNEMPLOYMENT RATE

MCD MOVING AVERAGE (MCD=2)



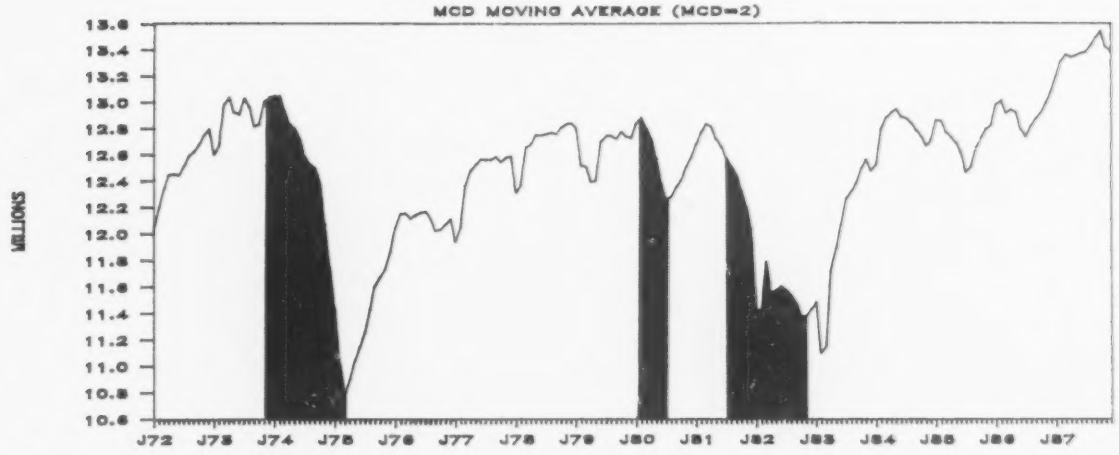

## U. I. FINAL PAYMENTS

MCD MOVING AVERAGE (MCD=2)



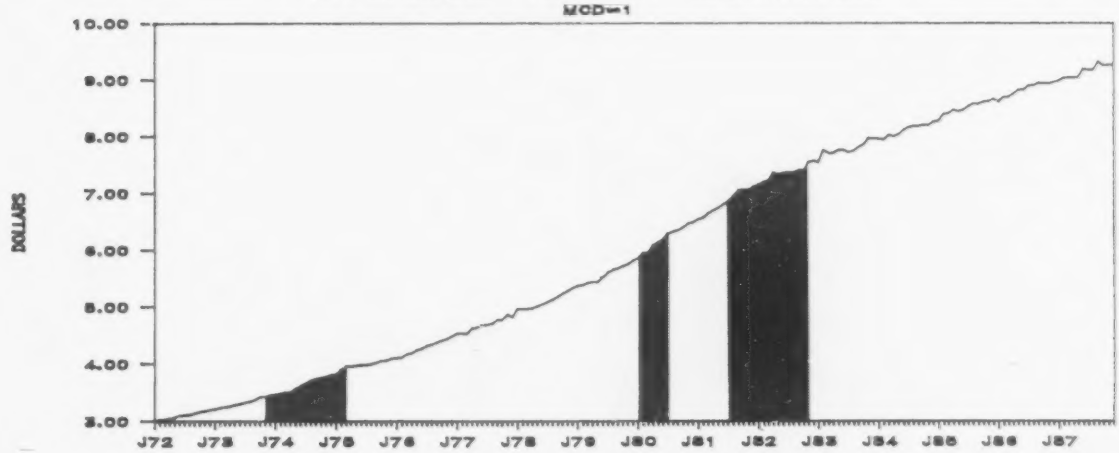
## AVERAGE MANHOURS

MCD MOVING AVERAGE (MCD=2)



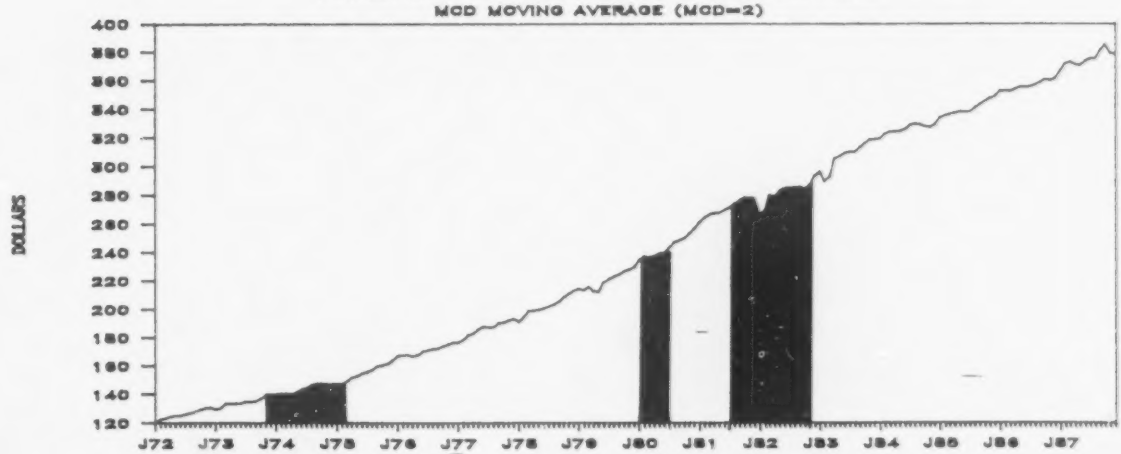

## AVERAGE HOURLY EARNINGS

MCD=1



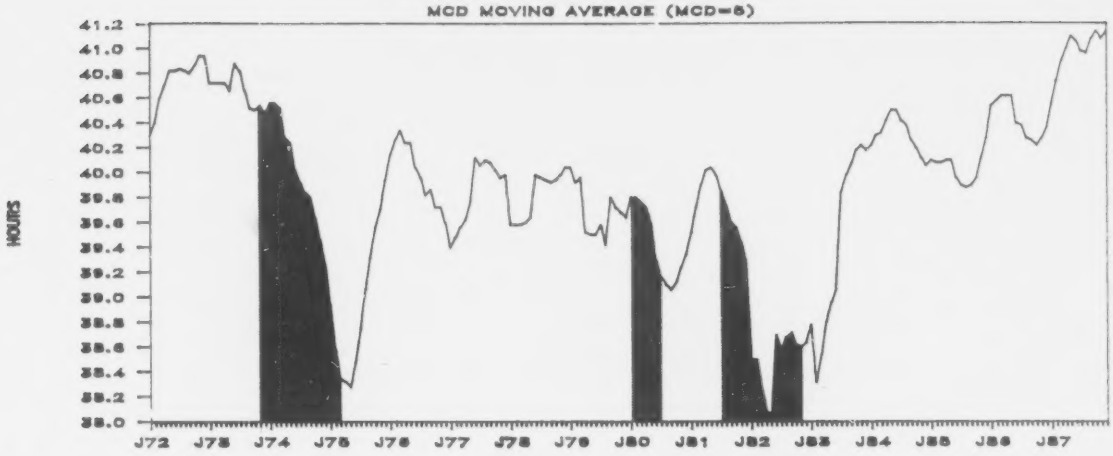

## AVERAGE WEEKLY EARNINGS

MCD MOVING AVERAGE (MCD=2)



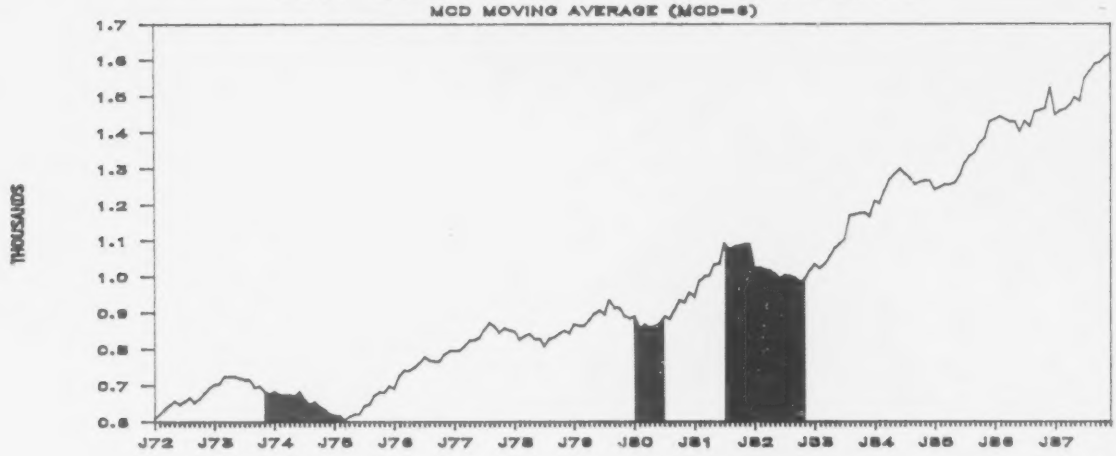
## AVERAGE WORKWEEK

MCD MOVING AVERAGE (MCD=6)



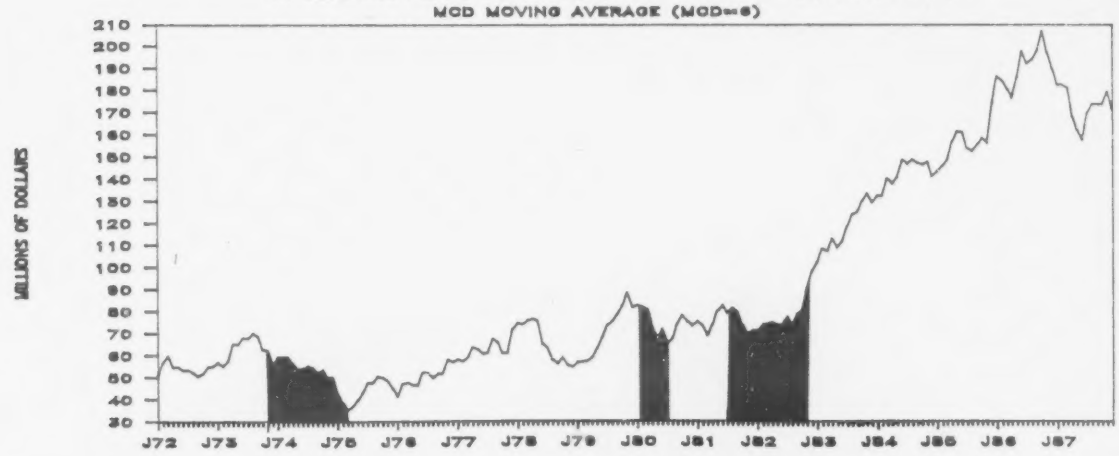

## NEW BUSINESS INCORPORATIONS

MCD MOVING AVERAGE (MCD=6)



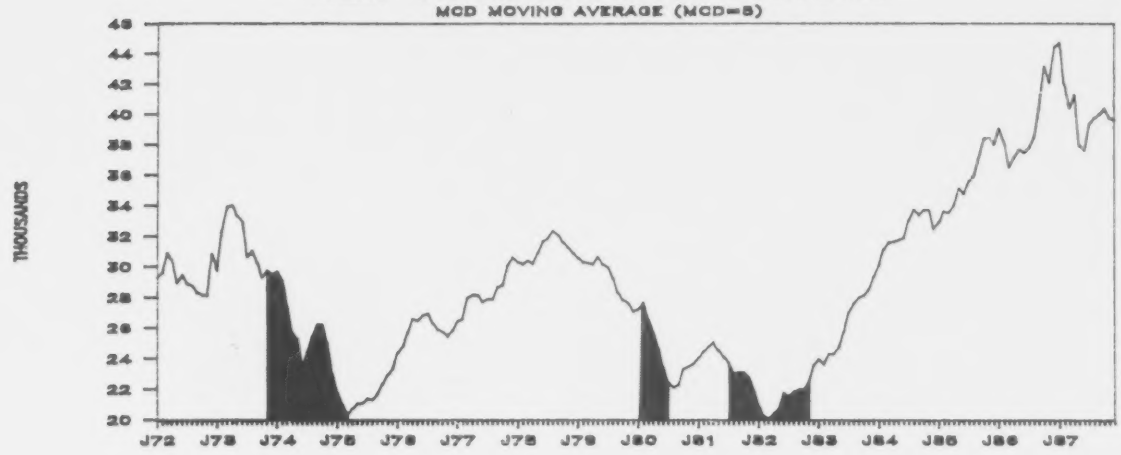

## VALUATION OF BUILDING PERMITS

MCD MOVING AVERAGE (MCD=6)



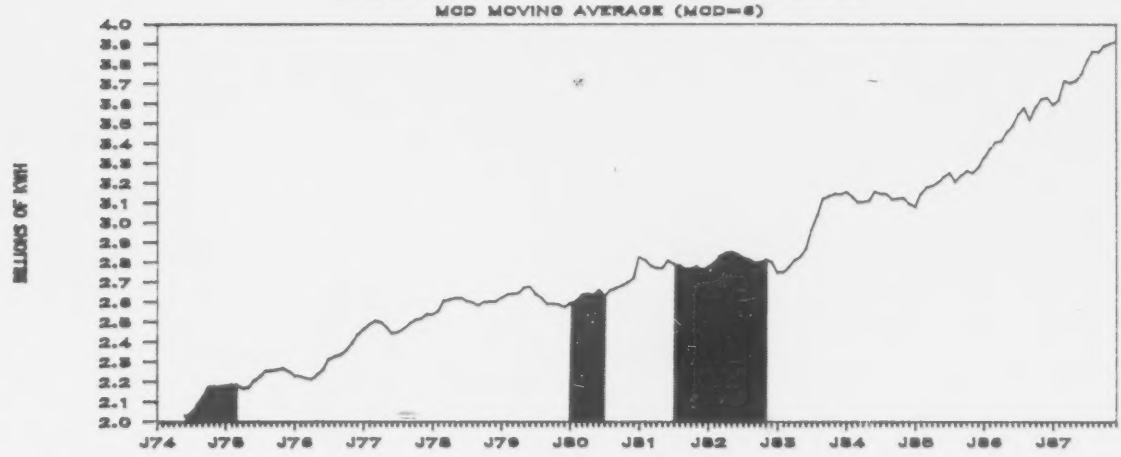
## NEW VEHICLE REGISTRATIONS

MOD MOVING AVERAGE (MOD=8)



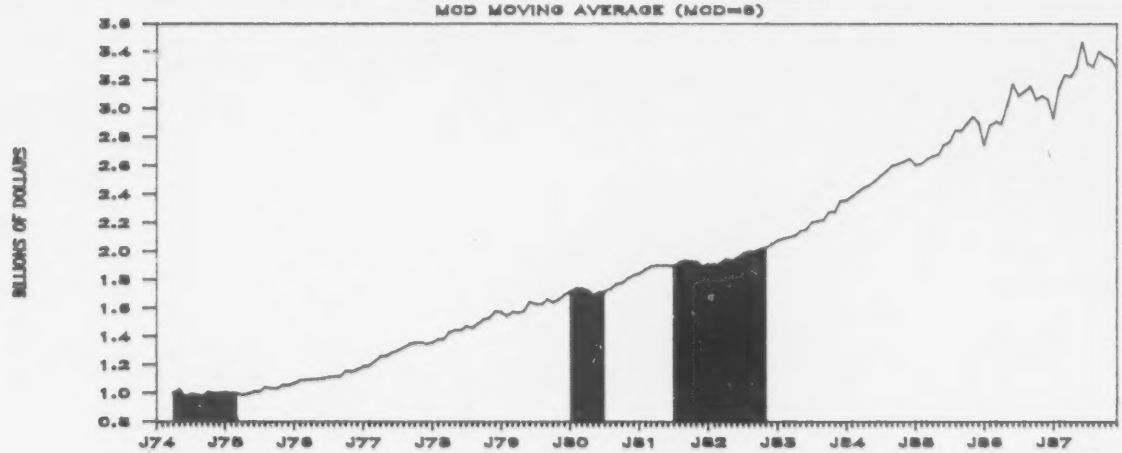

## ELECTRICAL POWER SALES

MOD MOVING AVERAGE (MOD=8)




## TAXABLE RETAIL SALES

MOD MOVING AVERAGE (MOD=8)



TAXABLE RETAIL SALES/CPI
MCD MOVING AVERAGE (MCD=6)
1967 DOLLARS (BILLIONS)
1.1
1.0
0.9
0.8
0.7
0.6
0.5
J74
J75
J76
J77
J78
J79
J80
J81
J82
J83
J84
J85
J86
J87

*Virginia Employment Commission*
*Economic Information Services Division*
*Post Office Box 1358*
*Richmond, Virginia 23211*

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**Virginia Employment Commission**

7/18/88 58205-4 A

# VIRGINIA ECONOMIC INDICATORS

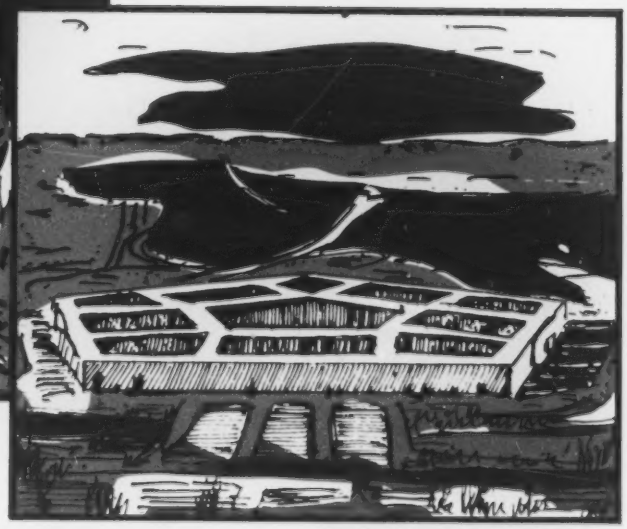
VOL. XX NO. 1

1st QUARTER 1988 DATA

TOURISM

TEXTILES

TOBACCO



GOVERNMENT

Virginia Employment Commission

## FOREWORD

This publication is designed to depict the movement of Virginia's key economic indicators in graphic and tabular form with accompanying narrative analysis.

We welcome any comments, suggestions, or questions concerning Virginia Economic Indicators. Please contact Dolores A. Esser, Director, Economic Information Services Division, P. O. Box 1358, Richmond, Virginia 23211, telephone (804) 786-7496, for additional information or explanation of the contents of this document.

TABLE OF CONTENTS


| | Page |
|---|---|
| FOREWORD | iii |
| ECONOMIC OUTLOOK | vii |
| HIGHLIGHTS VIRGINIA ECONOMIC INDICATORS, FIRST QUARTER 1988 | viii |
| VIRGINIA ECONOMIC INDICATORS, FIRST QUARTER DATA | 1 |
| EMPLOYMENT AND UNEMPLOYMENT INDICATORS, JANUARY 1987 TO MARCH 1988 | 2 |
| Nonagricultural Wage & Salary Employment | |
| Manufacturing Employment | |
| Total Unemployment Rate | |
| Average Weekly Initial Claims | |
| Average Weekly Insured Unemployment Rate | |
| U. I. Final Payments | |
| MANUFACTURING PRODUCTION WORKER INDICATORS, JANUARY 1987 TO MARCH 1988 | 4 |
| Average Weekly Hours | |
| Average Manhours | |
| Average Hourly Earnings | |
| Average Weekly Earnings | |
| BUSINESS INDICATORS, JANUARY 1987 TO MARCH 1988 | 6 |
| New Business Incorporations | |
| Valuation of Building Permits | |
| New Vehicle Registrations | |
| Electrical Power Sales | |
| Taxable Retail Sales | |
| DATA SUMMARY, MARCH 1988 | 8 |
| SUMMARY: MOVEMENT OF INDICATORS, JANUARY 1987 TO MARCH 1988 | 8 |
| DATA SUMMARY, JANUARY AND FEBRUARY 1988 | 9 |
| THE VIRGINIA LEADING AND COINCIDENT INDEXES | 10 |
| AN ANNUAL ECONOMETRIC FORECASTING MODEL FOR HAMPTON ROADS, VIRGINIA BY GUEST CONTRIBUTOR, DAVID G. GARRATY OF VIRGINIA WESLEYAN COLLEGE | 12 |
| HISTORICAL SUMMARY, PERFORMANCE OF INDICATORS OVER THE BUSINESS CYCLE | 21 |

## ECONOMIC OUTLOOK

### 1988, 1989, and 1990 U. S. Forecast Highlights

- o The first quarter's larger than expected 3.6 percent rate rise in Gross National Product (GNP) was primarily due to an enormous growth in exports.
  - Exports rose at a 20.7 percent annual rate while import growth was a modest 3.4 percent.
  - Domestic demand growth was a moderate 2.1 percent with a large increase in business fixed investment and an increase in consumer expenditures offset by decreases in residential fixed investment and government purchases.
  - A mild 3.4 percent inflation rate was below last year's 3.7 percent rate.
  - The civilian unemployment rate continued to drop reaching 5.7 percent for the first quarter.
- o Real GNP growth slows for the remainder of 1988 to an annual rate of 3.0 percent while the inflation rate rises to 4.2 percent.
  - Growth in exports and consumer demand, which strained the productive capacity utilization in the first quarter, is more modest through the remainder of the year easing the inflationary pressure on wages.
  - Despite moderate growth in the money supply, interest rates will rise slightly through the remainder of the year.
  - Food prices will rise due to the spring's drought but little overall rise in inflation is anticipated.
  - The dollar will remain fairly steady against other major currencies.
  - Encouraging first quarter economic news suggests that a recession is now unlikely this year. Economic Indicators was one of the few economic publications that DID NOT forecast a recession after last October's stock market plunge. We also said exports would be the driving force in the 1988 economy. So far, 1988's economic performance has been just about on target with our projections.
- o Solid early growth in the first half of 1989 will be followed by a slowdown in the second half of 1989 that will continue into 1990.
  - Restrictive monetary policy, which will be required to prevent high inflation, and actions to control the federal budget deficit (i.e., taxes and budget cuts) will combine to cause a growth recession.
  - Although increases in the interest, inflation, and unemployment rates are likely, these increases will be moderate.
  - Mortgage rate increases will cause a significant decline in housing starts.
  - The trade deficit will continue to decline due to the devalued dollar.

Thomas E. McGraw

HIGHLIGHTS
VIRGINIA ECONOMIC INDICATORS
First Quarter 1988

- During First Quarter 1988, seven of the Virginia economic indicator series set records on a seasonally adjusted basis.
  - Nonagricultural wage and salary employment attained new highs each month of the quarter, reaching 2,771,100 jobs in March. This was an impressive 117,000 jobs or 4.4 percent above March 1987.
  - The devalued dollar made Virginia manufacturers more competitive on both domestic and foreign markets and pushed manufacturing employment to a new high of 431,300 in January.
  - Average hourly earnings for factory production workers rose to $9.37 in March, 3.4 percent above the March year-ago level.
  - Average weekly earnings of these same production workers hit a peak $385.57 in March, 3.7 percent higher than a year earlier.
  - Confidence in the economy boosted the number of new businesses incorporated to an all-time high of 1,714 in February.
  - High levels of business activity along with cold January temperatures boosted electric power sales to a new high of 4,067.1 million kilowatt hours.
  - Consumers' bargain hunting at January sales boosted taxable retail sales to be an all-time high of $4,397.4 million.
- In addition to the above:
  - The record employment levels combined with less labor force participation lowered the total unemployment rate to 3.6 percent in March, the lowest level since September 1973, 14.5 years ago.
  - Unemployment insurance final payments dwindled to 1,576 in January, the lowest level since December 1974, almost 14 years ago.
  - The valuation of building permits issued rose to $221.1 million in March, a level second only to $239.2 million in December 1986.
  - Two major employing subdivisions also reached all-time record employment levels in March--the fast growing services sector grew to 654,400 jobs, and Virginia's important government sector provided 545,900 jobs.
- Seasonally adjusted nonfarm payroll employment in Virginia continued to grow in First Quarter 1988 as 53,500 jobs were added since the Fourth Quarter 1987, an increase of 2.0 percent. The State job count has expanded in each quarter since the recovery began in the October-December 1982 period. At 2,762,200, the level was nearly 619,000 above the recession low point.
- According to the Bureau of Labor Statistics of the U. S. Department of Labor, productivity rose strongly in all sectors in the first quarter and combined with modest gains in hourly compensation, contributed to relatively unchanged or falling unit labor costs. Productivity increased at a 3.2 percent annual rate during First Quarter 1988 in the business sector, as output rose 5.5 percent and hours of all persons engaged in the sector increased 2.2 percent (seasonally adjusted annual rates). During Fourth Quarter 1987, productivity had declined 1.5 percent, as output grew more slowly than hours.
- The CPI for All Urban Consumers averaged 116.1 (1982-4 = 100) in First Quarter 1988. This was 0.6 percent higher than the 115.4 average of Fourth Quarter 1987. The First Quarter 1988 was 4.0 percent higher than the First Quarter 1987 average. This compared to the 2.2 percent first quarter to first quarter rise between 1986 and 1987.
- An estimated 19,456 new jobs were created in Virginia during 1987 as a result of manufacturing and basic nonmanufacturing activity, according to the Virginia Department of Economic Development. The activity included both new facilities and expansions of existing facilities reported to the department. Manufacturing accounted for 11,121 new jobs and nonmanufacturing, 8,335.
- Coal production in Virginia was ahead of last year. Through May 19,591,000 short tons had been produced compared with 17,003,000 short tons mined during the similar 1987 period.

VIRGINIA ECONOMIC INDICATORS

VOL. XX, NO. 1 FIRST QUARTER DATA

## Indicators Overall Still Indecisive, But More Record Highs Set During Quarter

It sounds like a broken record, but the Virginia economy continued to exhibit much the same pattern it has for most of the last two years. The economy in the first quarter continued at a very high level without a great deal of motion in either direction. The 15 series used to measure the performance of the State's economy tended to seesaw back and forth within a relatively narrow range around very high levels. Even with the general lack of direction, seven series managed to break out of the muddled behavior pattern long enough to set new all-time records this quarter.

Nonagricultural wage and salary employment, still the star performer, set records each month of the quarter, reaching 2,771,100 in March. Factory employment topped a record 431,300 jobs in January. The two earnings figures, average hourly earnings ($9.37) and average weekly earnings ($385.57), both reached new highs in March. New business incorporations rose to a record 1,714 in February. Electric power sales were boosted to a record 4,067.1 million kilowatt hours by January's cold weather, and after-Christmas bargain hunters pushed January retail sales to a record $4,397.4 million. Also, the total unemployment rate and final unemployment payments reached their best levels in over 14 years, and building permits were the second highest level on record.

The first quarter's performance was as follows: January - seven series up, two unchanged, and six down; February - eight up, one unchanged, and six down; and March - six up, one unchanged, and eight down.

The six-month moving average of rising indicators (page 8) serves to illustrate the quarter's performance. The moving average enhances analysis because it smooths out much of the irregularity present in many of the individual series.

## Seven Series Set Records in Quarter--Two Others Record Best Figures in 14 Years

Nonagricultural wage and salary employment continued to be the best performing indicator, once again breaking records each month of the quarter and reaching an all-time high of 2,771,100 jobs, seasonally adjusted, in March. Nonfarm employment was pushed along by very strong trade, service, and construction components. Factory employment rose to a record 431,300 seasonally adjusted jobs in January before a few temporary attached layoffs in knit textiles reduced the factory job count to 423,800 by March.

The four unemployment-related indicators were mixed in the first quarter. The total unemployment rate buoyed by the record employment level and fewer labor force entrants than last year fell throughout the first quarter, reaching 3.6 percent in March, the lowest level since September 1973, 14.5 years ago. Average weekly initial claims, to some extent affected by the weather and this year's early Easter, seesawed back and forth--up in January, down in February, and up again in March. The insured unemployment rate was unchanged in January and February and moved down 0.1 percent to 0.9 percent in March. UI final payments after dropping in January to 1,576, the lowest level since December 1974, showed moderate increases in February and March.

The four production workers series this quarter were almost evenly divided, both up and down, but moved in a relatively narrow range. By March, both average hourly earnings at $9.37 and average weekly earnings at $385.57 began to move positively and set new all-time records.

The five somewhat volatile business-related series as a group were negative in January, positive in February, and again shifted to negative by March. New business incorporations were off in January, jumped to an all-time record of 1,714 in February, then were off again in March. Building permits slid in January, then increased for the rest of the quarter, reaching $221.1 million in March, second only to $239.2 million in December 1986. New vehicle registrations were down in January, rose to 42,313 in February (the highest since the tax incentive induced records of Fourth Quarter 1986), and then were slightly down in March. Cold January temperatures boosted electric power sales to a record 4,067.1 million kilowatt hours, then power usage slid downward for the remainder of the quarter. Consumers spending for bargains at January sales after a lack-luster Christmas boosted taxable retail sales to an all-time record of $4,397.4 million. Retail sales then fell for the rest of the quarter.

William F. Mezger

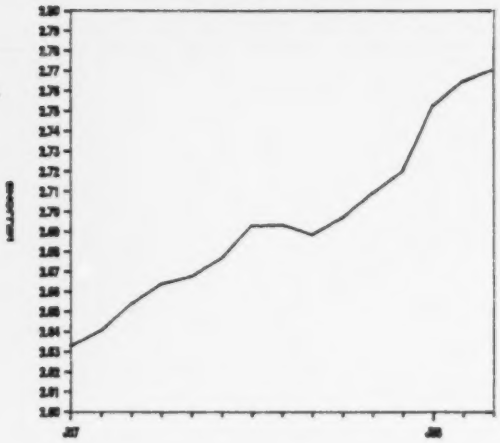
EMPLOYMENT AND UNEMPLOYMENT INDICATORS
January 1987 to March 1988

| | Nonagricultural Wage & Salary Emp.* (Thousands) | | Manufacturing Employment* (Thousands) | | Total Unemployment Rate* (Percent) | |
|---|---|---|---|---|---|---|
| 1987 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 2,588.4 | 2,633.2 | 423.3 | 426.7 | 4.8 | 4.3 |
| February | 2,588.0 | 2,640.8 | 424.7 | 427.3 | 4.8 | 4.4 |
| March | 2,622.3 | 2,654.1 | 425.8 | 427.5 | 4.6 | 4.4 |
| April | 2,653.5 | 2,664.2 | 427.2 | 428.5 | 4.2 | 4.3 |
| May | 2,681.3 | 2,668.0 | 427.5 | 429.2 | 4.1 | 4.2 |
| June | 2,711.8 | 2,677.0 | 431.1 | 430.7 | 4.3 | 4.3 |
| July | 2,695.9 | 2,693.2 | 429.8 | 431.1 | 4.1 | 4.1 |
| August | 2,693.7 | 2,693.7 | 431.3 | 430.4 | 3.9 | 4.1 |
| September | 2,704.8 | 2,688.7 | 432.6 | 429.2 | 3.9 | 4.2 |
| October | 2,718.9 | 2,697.3 | 432.3 | 429.3 | 3.9 | 4.1 |
| November | 2,733.7 | 2,709.3 | 432.5 | 429.9 | 4.0 | 4.1 |
| December | 2,744.7 | 2,720.2 | 430.6 | 429.7 | 4.0 | 4.1 |
| 1988 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 2,706.2 | 2,753.0 | 427.8 | 431.3 | 4.2 | 3.8 |
| February | 2,709.9 | 2,765.2 | 426.2 | 428.3 | 4.1 | 3.7 |
| March | 2,737.8 | 2,771.1 | 423.8 | 426.4 | 3.8 | 3.6 |

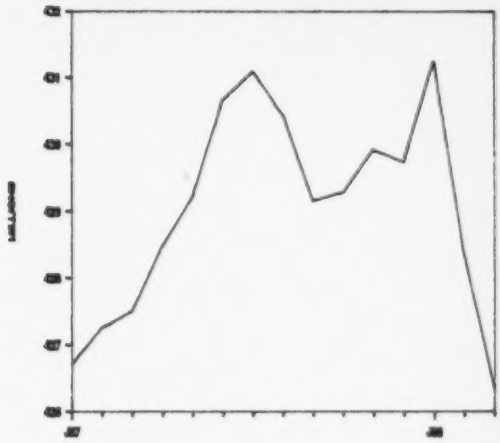
| | Average Weekly Initials Claims (Number) | | Avg. Wkly. Insured Unemployment Rate (Percent) | | U. I. Final Payments (Number) | |
|---|---|---|---|---|---|---|
| 1987 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 9,593 | 6,153 | 1.3 | 0.8 | 1,970 | 1,885 |
| February | 7,054 | 6,237 | 1.3 | 1.0 | 1,849 | 1,922 |
| March | 4,828 | 5,549 | 1.1 | 0.9 | 2,327 | 1,991 |
| April | 4,484 | 5,263 | 0.9 | 0.9 | 2,661 | 1,828 |
| May | 3,519 | 5,093 | 0.8 | 0.9 | 1,917 | 1,661 |
| June | 4,810 | 5,561 | 0.9 | 1.1 | 2,268 | 2,257 |
| July | 5,192 | 5,115 | 0.7 | 0.8 | 1,834 | 1,703 |
| August | 3,530 | 4,979 | 0.7 | 0.9 | 1,639 | 1,827 |
| September | 3,478 | 5,326 | 0.7 | 0.9 | 1,454 | 1,800 |
| October | 3,535 | 4,751 | 0.6 | 0.8 | 1,288 | 1,626 |
| November | 5,329 | 5,511 | 0.7 | 0.8 | 1,177 | 1,653 |
| December | 11,354 | 5,814 | 1.1 | 1.0 | 1,510 | 1,640 |
| 1988 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 11,715 | 7,558 | 1.5 | 1.0 | 1,655 | 1,576 |
| February | 7,323 | 6,435 | 1.3 | 1.0 | 1,938 | 2,012 |
| March | 6,252 | 7,236 | 1.1 | 0.9 | 2,442 | 2,098 |

*These series have been adjusted to First Quarter 1987 benchmarks.

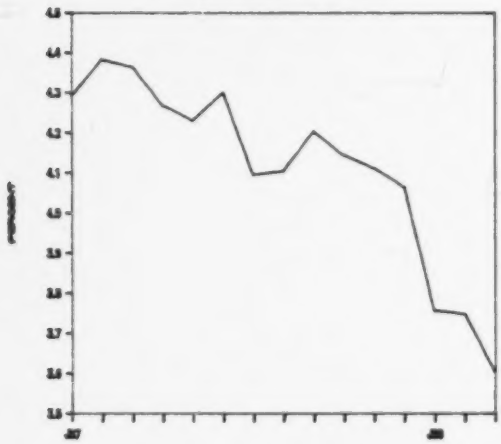
NONAG W & S EMPLOYMENT



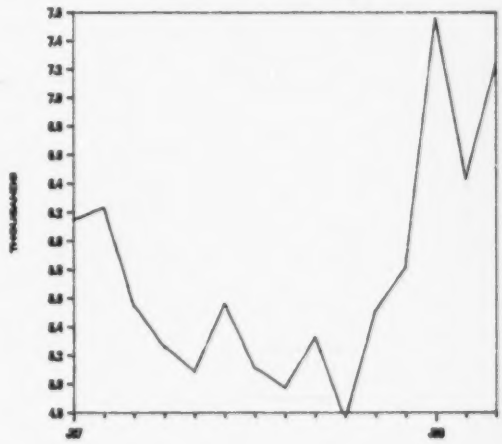
MANUFACTURING EMPLOYMENT



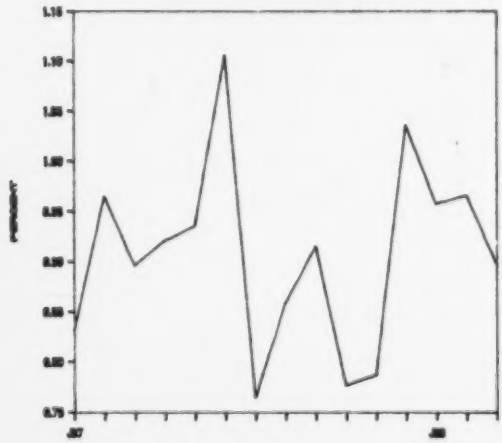
TOTAL UNEMPLOYMENT RATE



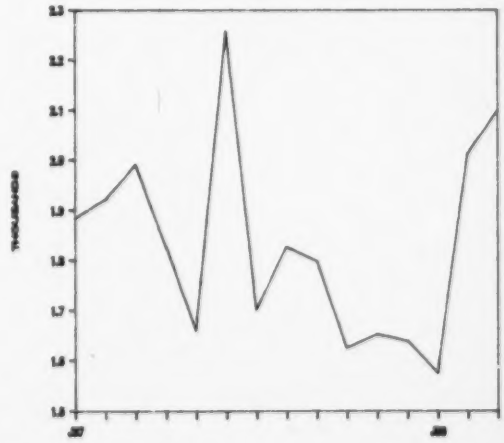
AVG. WEEKLY INITIAL CLAIMS



INSURED UNEMPLOYMENT RATE



U.I. FINAL PAYMENTS



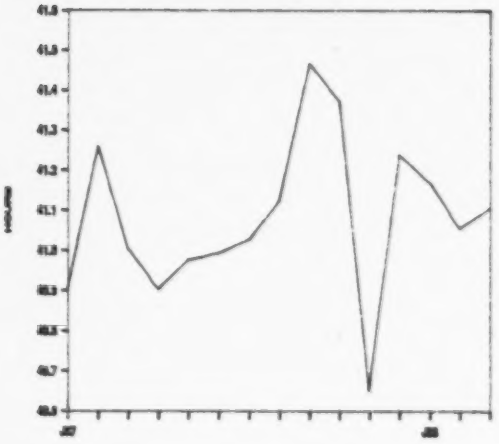
MANUFACTURING PRODUCTION WORKER INDICATORS
January 1987 to March 1988

| | Average Weekly Hours* (Hours) | | Average Manhours* (Thousands) | |
|---|---|---|---|---|
| 1987 | Unadj. | Adj. | Unadj. | Adj. |
| January | 40.5 | 40.9 | 13,020.2 | 13,231.9 |
| February | 40.6 | 41.3 | 13,052.4 | 13,305.2 |
| March | 40.8 | 41.0 | 13,171.5 | 13,318.0 |
| April | 40.7 | 40.9 | 13,174.9 | 13,308.0 |
| May | 41.1 | 41.0 | 13,334.9 | 13,375.0 |
| June | 41.2 | 41.0 | 13,515.3 | 13,421.4 |
| July | 40.7 | 41.0 | 13,312.7 | 13,474.4 |
| August | 41.0 | 41.1 | 13,460.9 | 13,501.4 |
| September | 41.8 | 41.5 | 13,793.1 | 13,575.9 |
| October | 41.5 | 41.4 | 13,676.6 | 13,554.6 |
| November | 41.1 | 40.7 | 13,561.5 | 13,308.6 |
| December | 41.9 | 41.2 | 13,731.4 | 13,462.2 |
| 1988 | Unadj. | Adj. | Unadj. | Adj. |
| January | 40.8 | 41.2 | 13,281.5 | 13,483.8 |
| February | 40.4 | 41.1 | 13,083.6 | 13,323.4 |
| March | 40.9 | 41.1 | 13,164.7 | 13,311.1 |

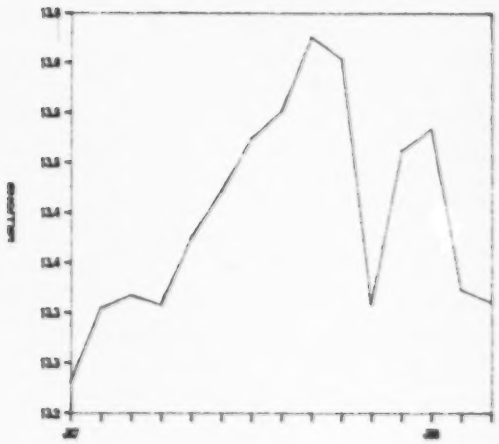
| | Average Hourly Earnings* (Dollars) | | Average Weekly Earnings* (Dollars) | |
|---|---|---|---|---|
| 1987 | Unadj. | Adj. | Unadj. | Adj. |
| January | 9.05 | 9.00 | 366.53 | 367.63 |
| February | 9.07 | 9.03 | 368.24 | 373.09 |
| March | 9.07 | 9.06 | 370.06 | 371.92 |
| April | 9.04 | 9.06 | 367.93 | 370.15 |
| May | 9.03 | 9.07 | 371.13 | 371.87 |
| June | 9.16 | 9.19 | 377.39 | 375.89 |
| July | 9.16 | 9.16 | 372.81 | 375.82 |
| August | 9.14 | 9.17 | 374.74 | 376.62 |
| September | 9.30 | 9.30 | 388.74 | 386.81 |
| October | 9.22 | 9.25 | 382.63 | 383.40 |
| November | 9.27 | 9.27 | 381.00 | 376.48 |
| December | 9.31 | 9.27 | 390.09 | 382.44 |
| 1988 | Unadj. | Adj. | Unadj. | Adj. |
| January | 9.30 | 9.26 | 379.44 | 380.58 |
| February | 9.31 | 9.27 | 376.12 | 381.07 |
| March | 9.38 | 9.37 | 383.64 | 385.57 |

*These series have been adjusted to First Quarter 1987 benchmarks.

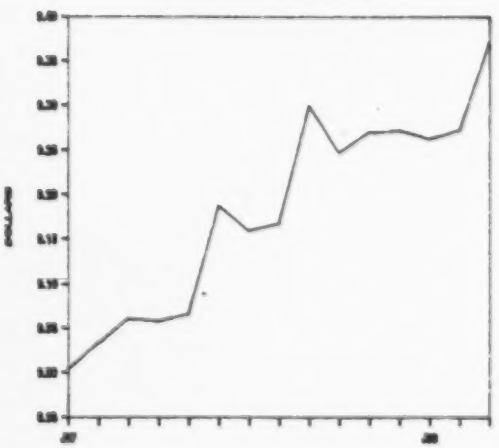
AVERAGE WEEKLY HOURS



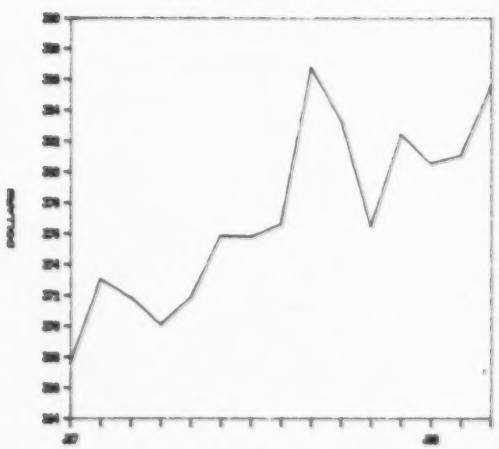
AVERAGE MANHOURS



AVERAGE HOURLY EARNINGS



AVERAGE WEEKLY EARNINGS

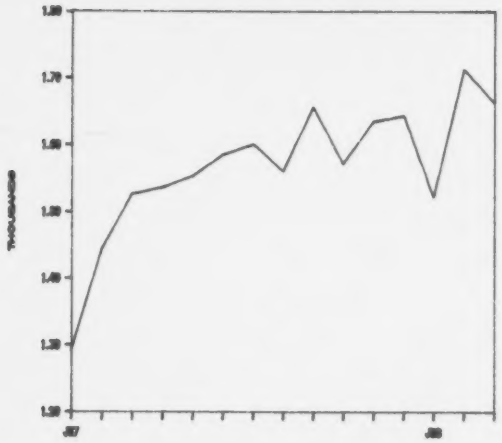


BUSINESS INDICATORS
January 1987 to March 1988

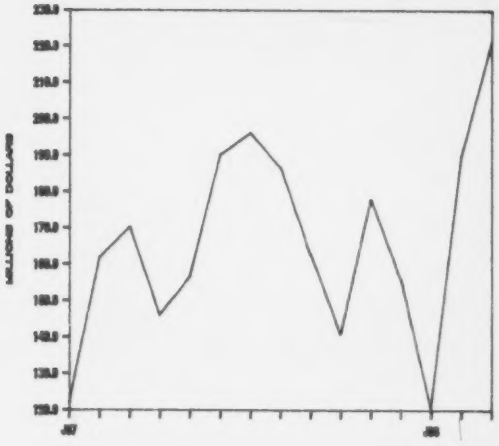
| | New Business Incorporations (Number) | | Valuation of Bldg. Permits ($ Millions) | | New Vehicle Registrations (Number) | |
|---|---|---|---|---|---|---|
| 1987 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 1,237 | 1,293 | 111.8 | 122.2 | 41,798 | 41,840 |
| February | 1,453 | 1,444 | 123.4 | 161.9 | 28,975 | 34,169 |
| March | 1,707 | 1,527 | 195.0 | 170.3 | 41,798 | 39,960 |
| April | 1,694 | 1,537 | 157.4 | 146.1 | 43,113 | 40,105 |
| May | 1,582 | 1,554 | 165.1 | 156.6 | 39,956 | 36,192 |
| June | 1,584 | 1,586 | 258.0 | 190.3 | 47,997 | 41,882 |
| July | 1,624 | 1,602 | 190.1 | 196.2 | 46,707 | 41,965 |
| August | 1,541 | 1,561 | 185.2 | 186.7 | 41,958 | 40,855 |
| September | 1,519 | 1,656 | 148.5 | 163.0 | 42,661 | 38,712 |
| October | 1,593 | 1,573 | 148.5 | 141.0 | 36,593 | 36,159 |
| November | 1,436 | 1,636 | 171.4 | 178.0 | 31,180 | 38,494 |
| December | 1,638 | 1,645 | 127.8 | 156.2 | 29,350 | 40,764 |
| 1988 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 1,451 | 1,523 | 110.8 | 120.4 | 32,226 | 32,098 |
| February | 1,724 | 1,714 | 144.9 | 189.9 | 35,797 | 42,313 |
| March | 1,861 | 1,665 | 252.9 | 221.1 | 42,684 | 41,003 |

| | Electrical Power Sales (Mil. of KWH) | | Taxable Retail Sales ($ Millions) | |
|---|---|---|---|---|
| 1987 | Unadj. | Adj. | Unadj. | Adj. |
| January | 4,142.9 | 3,571.5 | 2,388.1 | 2,767.2 |
| February | 4,221.3 | 3,769.0 | 3,569.4 | 3,926.7 |
| March | 3,879.1 | 3,777.1 | 2,985.7 | 3,152.8 |
| April | 3,381.9 | 3,741.0 | 3,109.4 | 3,242.3 |
| May | 3,177.8 | 3,787.6 | 3,472.1 | 3,220.9 |
| June | 3,756.6 | 3,884.8 | 3,579.4 | 3,488.7 |
| July | 4,237.3 | 3,938.0 | 3,352.7 | 3,376.3 |
| August | 4,511.6 | 4,024.6 | 3,082.5 | 2,897.1 |
| September | 3,972.2 | 3,856.5 | 3,658.5 | 3,729.4 |
| October | 3,396.8 | 3,855.6 | 3,123.3 | 3,226.5 |
| November | 3,326.4 | 3,827.8 | 3,583.5 | 3,396.7 |
| December | 3,929.5 | 3,910.0 | 3,861.0 | 3,360.3 |
| 1988 | Unadj. | Adj. | Unadj. | Adj. |
| January | 4,709.7 | 4,067.1 | 3,781.8 | 4,397.4 |
| February | 4,448.0 | 3,967.9 | 3,501.8 | 3,843.9 |
| March | 4,008.3 | 3,895.3 | 2,935.0 | 3,092.7 |

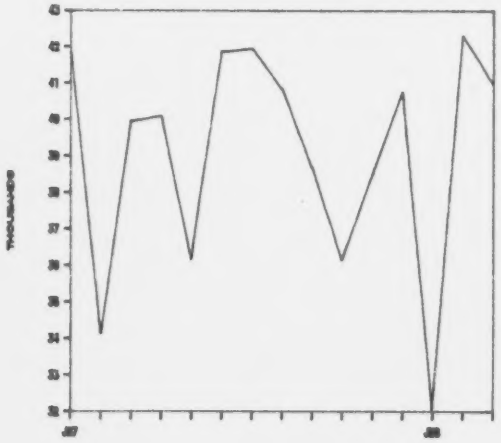
NEW BUSINESS INCORPORATIONS



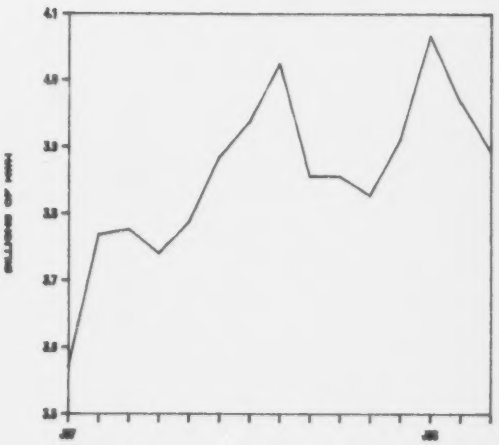
VALUATION OF BUILDING PERMITS



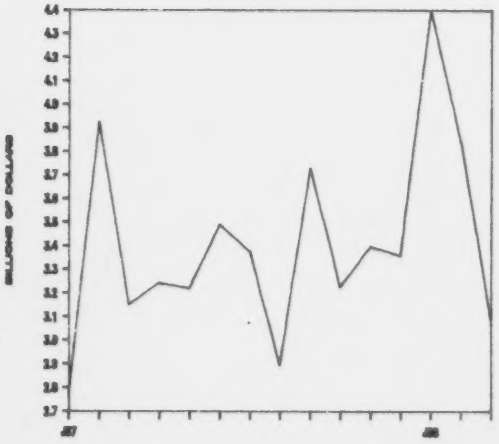
NEW VEHICLE REGISTRATIONS



ELECTRICAL POWER SALES



TAXABLE RETAIL SALES

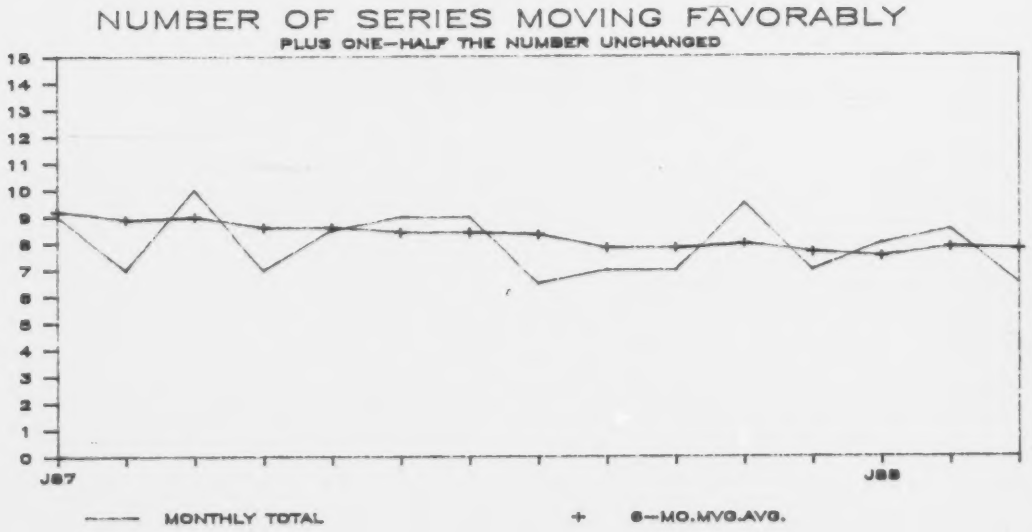


| DATA SUMMARY<br>MARCH 1988<br>(SEASONALLY ADJUSTED DATA) | Mar.<br>1988 | Feb.<br>1988 | Mar.<br>1987 | Percent & (Direction**) of Change<br>Feb. '88-<br>Mar. '88 | <br>Mar. '87-<br>Mar. '88 |
|---|---|---|---|---|---|
| EMPLOYMENT | | | | | |
| *Nonagricultural Wage & Salary Employment (000) | 2,771.1 | 2,765.2 | 2,654.1 | 0.2 (+) | 4.4 (+) |
| *Manufacturing Employment (000) | 426.4 | 428.3 | 427.5 | -0.4 (-) | -0.3 (-) |
| UNEMPLOYMENT | | | | | |
| *Total Unemployment Rate (%) | 3.6 | 3.7 | 4.4 | (+) | (+) |
| Average Weekly Initial Claims | 7,236 | 6,435 | 5,549 | 12.4 (-) | 30.4 (-) |
| Average Weekly Insured Unemployment Rate (%) | 0.9 | 1.0 | 0.9 | (+) | (0) |
| Unemployment Insurance Final Payments | 2,098 | 2,012 | 1,991 | 4.2 (-) | 5.4 (-) |
| MANUFACTURING PRODUCTION WORKERS | | | | | |
| *Average Weekly Hours | 41.1 | 41.1 | 41.0 | 0.0 (0) | 0.2 (+) |
| *Average Manhours (000) | 13,311.1 | 13,323.4 | 13,318.0 | -0.1 (-) | -0.1 (-) |
| *Average Hourly Earnings ($) | 9.37 | 9.27 | 9.06 | 1.1 (+) | 3.4 (+) |
| *Average Weekly Earnings ($) | 385.57 | 381.07 | 371.92 | 1.2 (+) | 3.7 (+) |
| BUSINESS | | | | | |
| New Business Incorporations | 1,665 | 1,714 | 1,527 | -2.9 (-) | 9.0 (+) |
| Valuation of Building Permits -18 Cities ($M) | 221.1 | 189.9 | 170.3 | 16.4 (+) | 29.8 (+) |
| New Vehicle Registrations | 41,003 | 42,313 | 39,960 | -3.1 (-) | 2.6 (+) |
| Electrical Power Sales (M of KWH) | 3,895.3 | 3,967.9 | 3,777.1 | -1.8 (-) | 3.1 (+) |
| Taxable Retail Sales ($M) | 3,092.7 | 3,843.9 | 3,152.8 | -19.5 (-) | -1.9 (-) |

* Revised to First Quarter 1987 benchmarks

** + = Favorable, - = Not Favorable, 0 = No Change(less than .05%)

SUMMARY



| DATA SUMMARY<br>FEBRUARY 1988<br>(SEASONALLY ADJUSTED DATA) | Feb.<br>1988 | Jan.<br>1988 | Feb.<br>1987 | Percent & (Direction**) of Change<br>Jan. '88-<br>Feb. '88 | <br>Feb. '87-<br>Feb. '88 |
|---|---|---|---|---|---|
| EMPLOYMENT | | | | | |
| *Nonagricultural Wage & Salary Employment (000) | 2,765.2 | 2,753.0 | 2,640.8 | 0.4 (+) | 4.7 (+) |
| *Manufacturing Employment (000) | 428.3 | 431.3 | 427.3 | -0.7 (-) | 0.2 (+) |
| UNEMPLOYMENT | | | | | |
| *Total Unemployment Rate (%) | 3.7 | 3.8 | 4.4 | (+) | (+) |
| Average Weekly Initial Claims | 6,435 | 7,558 | 6,237 | -14.9 (+) | 3.2 (-) |
| Average Weekly Insured Unemployment Rate (%) | 1.0 | 1.0 | 1.0 | (0) | (0) |
| Unemployment Insurance Final Payments | 2,013 | 1,576 | 1,922 | 27.7 (-) | 4.7 (-) |
| MANUFACTURING PRODUCTION WORKERS | | | | | |
| *Average Weekly Hours | 41.1 | 41.2 | 41.3 | -0.2 (-) | -0.5 (-) |
| *Average Manhours (000) | 13,323.4 | 13,483.8 | 13,305.2 | -1.2 (-) | 0.1 (+) |
| *Average Hourly Earnings ($) | 9.27 | 9.26 | 9.03 | 0.1 (+) | 2.7 (+) |
| *Average Weekly Earnings ($) | 381.07 | 380.58 | 373.09 | 0.1 (+) | 2.1 (+) |
| BUSINESS | | | | | |
| New Business Incorporations | 1,714 | 1,523 | 1,444 | 12.5 (+) | 18.7 (+) |
| Valuation of Building Permits -18 Cities ($M) | 189.9 | 120.4 | 161.9 | 57.7 (+) | 17.3 (+) |
| New Vehicle Registrations | 42,313 | 32,098 | 34,169 | 31.8 (+) | 23.8 (+) |
| Electrical Power Sales (M of KWH) | 3,967.9 | 4,067.1 | 3,769.0 | -2.4 (-) | 5.3 (+) |
| Taxable Retail Sales ($M) | 3,843.9 | 4,397.4 | 3,926.7 | -12.6 (-) | -2.1 (-) |

| DATA SUMMARY<br>JANUARY 1988<br>(SEASONALLY ADJUSTED DATA) | Jan.<br>1988 | Dec.<br>1988 | Jan.<br>1987 | Percent & (Direction**) of Change<br>Dec. '87-<br>Jan. '88 | <br>Jan. '87-<br>Jan. '88 |
|---|---|---|---|---|---|
| EMPLOYMENT | | | | | |
| *Nonagricultural Wage & Salary Employment (000) | 2,753.0 | 2,720.2 | 2,633.2 | 1.2 (+) | 4.5 (+) |
| *Manufacturing Employment (000) | 431.3 | 429.7 | 426.7 | 0.4 (+) | 1.1 (+) |
| UNEMPLOYMENT | | | | | |
| *Total Unemployment Rate (%) | 3.8 | 4.1 | 4.3 | (+) | (+) |
| Average Weekly Initial Claims | 7,558 | 5,814 | 6,153 | 30.0 (-) | 22.8 (-) |
| Average Weekly Insured Unemployment Rate (%) | 1.0 | 1.0 | 0.8 | (0) | (-) |
| Unemployment Insurance Final Payments | 1,576 | 1,640 | 1,885 | -3.9 (+) | -16.4 (+) |
| MANUFACTURING PRODUCTION WORKERS | | | | | |
| *Average Weekly Hours | 41.2 | 41.2 | 40.9 | 0.0 (0) | 0.7 (+) |
| *Average Manhours (000) | 13,483.8 | 13,462.2 | 13,231.9 | 0.2 (+) | 1.9 (+) |
| *Average Hourly Earnings ($) | 9.26 | 9.27 | 9.00 | -0.1 (-) | 2.9 (+) |
| *Average Weekly Earnings ($) | 380.58 | 382.44 | 367.63 | -0.5 (-) | 3.5 (+) |
| BUSINESS | | | | | |
| New Business Incorporations | 1,523 | 1,645 | 1,293 | -7.4 (-) | 17.8 (+) |
| Valuation of Building Permits -18 Cities ($M) | 120.4 | 156.2 | 122.2 | -22.9 (-) | -1.5 (-) |
| New Vehicle Registrations | 32,098 | 40,764 | 41,840 | -21.3 (-) | -23.3 (-) |
| Electrical Power Sales (M of KWH) | 4,067.1 | 3,910.0 | 3,571.5 | 4.0 (+) | 13.9 (+) |
| Taxable Retail Sales ($M) | 4,397.4 | 3,360.3 | 2,767.2 | 30.9 (+) | 58.9 (+) |

* Revised to First Quarter 1987 benchmarks

** + = Favorable, - = Not Favorable, 0 = No Change(less than .05%)

THE VIRGINIA LEADING AND COINCIDENT INDEXES

| Month | Leading Index (1977=100) | Monthly Percent Change | Quarterly Percent Change | Coincident Index (1977=100) | Monthly Percent Change | Quarterly Percent Change |
|---|---|---|---|---|---|---|
| January 1987 | 158.5 | -0.5 | | 139.0 | +0.2 | |
| February | 158.9 | +0.2 | +0.7 | 141.1 | +1.5 | +1.4 |
| March | 160.3 | +0.9 | | 141.7 | +0.4 | |
| April | 161.0 | +0.4 | | 142.5 | +0.6 | |
| May | 162.6 | +1.0 | +1.7 | 142.5 | 0.0 | +1.8 |
| June | 162.4 | -0.2 | | 144.3 | +1.2 | |
| July | 164.3 | +1.2 | | 145.8 | +1.1 | |
| August | 165.3 | +0.6 | +2.1 | 143.5 | -1.6 | +1.0 |
| September | 166.6 | +0.8 | | 144.2 | +0.5 | |
| October | 167.5 | +0.5 | | 144.0 | -0.1 | |
| November | 168.3 | +0.5 | +1.6 | 144.8 | +0.6 | 0.0 |
| December | 168.2 | -0.1 | | 144.5 | -0.3 | |
| January 1988 | 166.4 | -0.1 | | 148.3 | +2.6 | |
| February | 166.6 | +0.1 | -0.8 | 151.0 | +1.8 | +3.7 |
| March | 166.8 | +0.1 | | 150.0 | -0.7 | |

Leading Index Components: Average Weekly Hours for Production Workers, 5-month moving average; New Businesses, 6-month moving average; Building Permits, deflated to 1982 dollars, 6-month moving average; Average Weekly Initial Claims, 3-month moving average.

Coincident Index Components: Personal Income Less Transfer Payments, deflated to 1982 dollars: Industrial Production Index; Nonagricultural Wage and Salary Employment; Taxable Retail Sales, deflated to 1967 dollars by the consumer price index, 6-month moving average.

Notes: All components are seasonally adjusted.

Sources include the WEFA Group for Industrial Production Index and most recent quarter Personal Income, and the U. S. Department of Commerce for Personal Income.

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The Virginia coincident index showed improved performance during the First Quarter 1988 over the previous quarter but the leading index slipped. The post-stock market crash quarter showed the leading index down by 0.8 percent and the coincident index ahead by 3.7 percent. The State leading index underperformed its national counterpart, which fell by 0.1 percent. The State coincident index's change outperformed the national index (+3.7 vs +0.9 percent).

The leading index had its strength sapped by various components during the quarter. While new businesses and building permits were strong during February and March, large increases in average weeks claimed and a small slide in average hours worked by production workers put a damper on the index. Among the coincident index components, personal income less transfer payments and the industrial production index showed solid gains. Continued growth in nonagricultural wage and salary employment and in taxable retail sales, except March, sustained the index during the quarter.

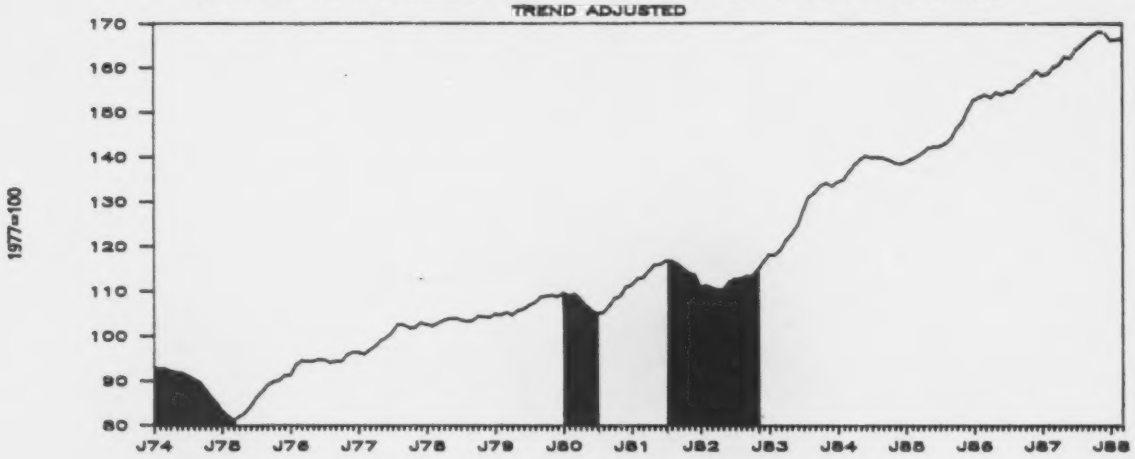
| Quarter | Total Personal Income Millions | Transfer Payments Millions | Real Personal Income ($82) Millions | Transfer Payments ($82) Millions |
|---|---|---|---|---|
| 1st Qtr 1987 | $ 92,749 | $12,160 | $79,403 | $10,417 |
| 2nd Qtr | 93,690 | 12,370 | 79,130 | 10,475 |
| 3rd Qtr | 96,060 | 12,410 | 80,350 | 10,419 |
| 4th Qtr | 98,010 | 12,570 | 81,130 | 10,405 |
| 1st Qtr 1988 | 100,140 | 12,890 | 82,070 | 10,564 |

Notes: All personal income data reflects seasonally adjusted annual rates.

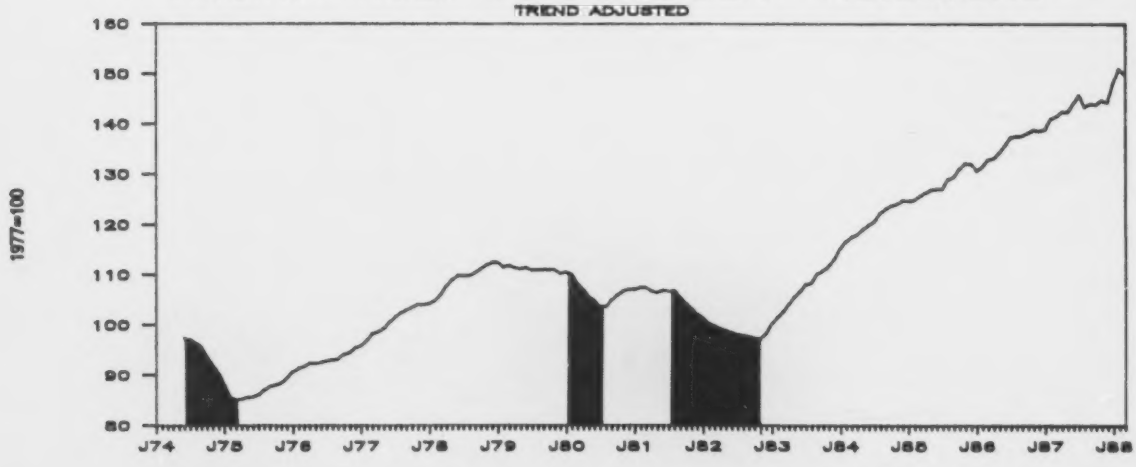
Sources include the WEFA Group and the Bureau of Economic Analysis, U. S. Department of Commerce.

Conway L. Lackman

## VIRGINIA INDEX OF LEADING INDICATORS




## VIRGINIA INDEX OF COINCIDENT INDICATORS



# AN ANNUAL ECONOMETRIC FORECASTING MODEL FOR HAMPTON ROADS, VIRGINIA

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## Introduction

Regional economists have a variety of methods by which they can analyze an area's economy. Among them are economic base models, input-output models, and econometric models. These models can be utilized both as forecasting tools and as means for evaluating different governmental policy options or economic shocks. Selection of a particular type of model will be influenced by the proposed use of the model (forecasting vs. policy analysis) and the accuracy-cost trade-off. Generally, more accurate models are more costly to construct and maintain. Additionally, there are often trade-offs in forecasting and policy analysis performance.

Regional econometric models are composed of sets of interrelated equations which attempt to model the key structural interrelationships of an area's economy. These equations consist of both statistically estimated relationships and identities. The statistical equations are estimated through regression analysis of time series data from the region. While these models do not provide the detail inherent in an input-output model, they do show various interconnections within the region as well as with the national economy. Thus, regional econometric models can be utilized as forecasting tools and to evaluate likely economic effects of alternative governmental policies or national economic scenarios.

One of the primary constraints on the development of substate econometric models had been the lack of consistent and accurate data. However, since 1975 the Bureau of Economic Analysis (BEA) in the U. S. Department of Commerce has provided consistent, reliable data on both employment and income. This data, provided by the BEA's Regional Economic Information System (REIS), is reported at the county level and thus allows for the construction of substate econometric models. One of the earliest attempts to incorporate this new data into a regional model was undertaken by Semoon Chang for Mobile, Alabama. Chang's model was based on Glickman's prototype but had significant differences. The reliance on REIS data, the importance of the military, and the general structure of the Mobile model suggested that it would provide an appropriate initial structural form for the development of an econometric model of Hampton Roads.

The Hampton Roads model uses annual data and consists of 24 equations, 19 of which are statistically estimated. The five remaining equations are identities. The model is driven by four primary exogenous variables: U. S. real GNP (RGNP), real defense purchases (RDEFPUR), the six-month commercial paper rate (COMPAPRT), and time (TIME). In addition, there are five lagged endogenous (estimated by the model) explanatory variables: Gross Regional Product lagged one year (RGRP(-1)), the percentage change in Gross Regional Product lagged one and two years (PCRGRP(-1) and PCRGRP(-2)), population lagged three years (POP(-3)), and an index (HRI) which consists of the ratio of Hampton Roads GRP (in millions) to U. S. GNP (in billions). There are also two dummy variables. One reflects slower growth of transfer payments in the Reagan years (RSDUMMY) while the other reflects the more favorable investment climate of the Reagan years (RDUMMY). Average labor productivity for each industry is used in the employment equations. Although these could be estimated by the model they are treated as a secondary exogenous variable. Thus, historical values of productivity are utilized when simulating the model.

Endogenous variables (i.e. those predicted by the model) include real Gross Regional Product in total (RGRP) and by major industry, employment (both full- and part-time as well as self-employed) in total (ETOTID) and by major industry, real Personal Income (RTPIID) and its three component parts, population (POP), and real taxable retail sales (RHRERTS).

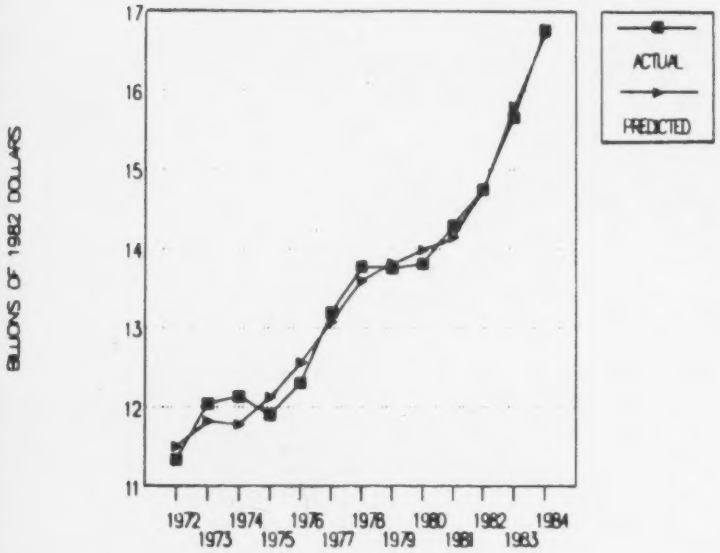
The model was estimated using Ordinary Least Squares (OLS) regression analysis. Although the model contains a block of nine simultaneous equations the OLS technique was chosen over methods which are theoretically more appropriate such as two stage least squares (which Chang employed in the Mobile model). With small samples and possible multicollinearity in exogenous variables (as are often the case in regional models) OLS has been shown to be as good as or better than other techniques.

The model was estimated over the 1972-1984 period. Although more data was available (e.g. from 1969 for employment) the 1972-1984 period was chosen to avoid those years of the Vietnam war when real defense purchases rose significantly but had their major impact elsewhere. The 1972-1984 period more accurately reflects current economic relationships between Hampton Roads and national defense spending. All monetary figures are expressed in constant (1982) dollars. Gross Regional Product figures were deflated with the appropriate national GNP deflator. Income figures and taxable retail sales were deflated using the national Consumer Price Index. Appendix I contains a graphic depiction of the model along with a list of all variables and data sources.

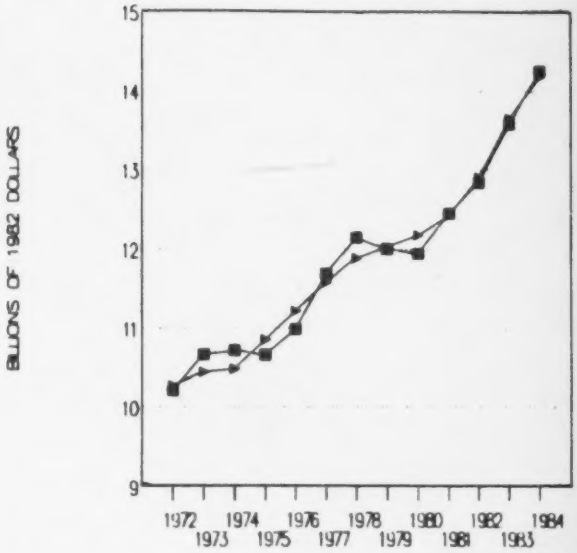
## Ex Post Simulation

A simultaneous equation model should be simulated over the estimation period in order to be able to evaluate the dynamic structure of the model. Thus, a dynamic simulation was performed over the 1972-1984 period. The results of this simulation (which used the model's solutions for all lagged endogenous variables rather than their actual historical values) are then compared to the actual values of the endogenous variables in order to provide some insight into the model's accuracy. The accompanying graphs depict the results of this simulation for four of the model's key endogenous variables (GRP, Income, Employment, and Population).

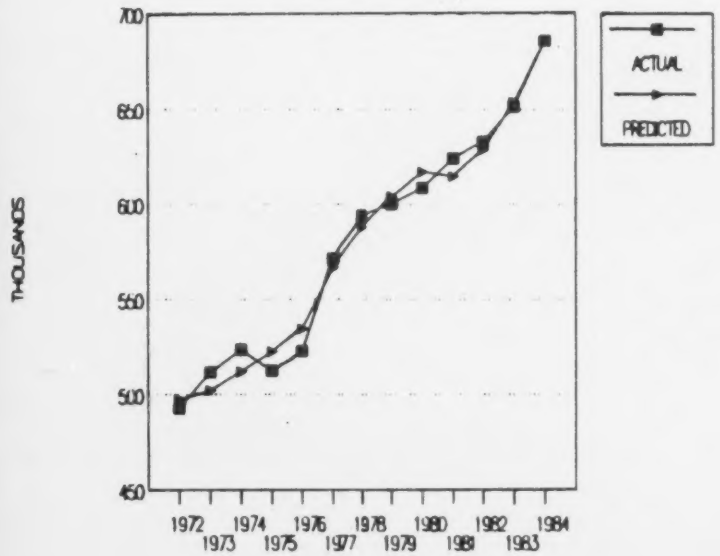
## GROSS REGIONAL PRODUCT



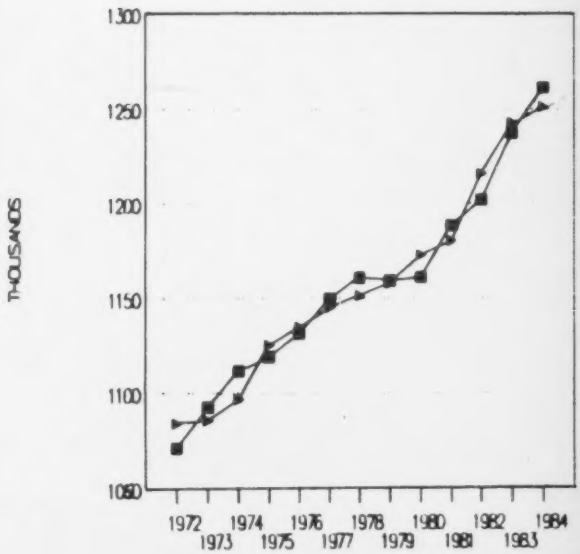

## PERSONAL INCOME




## EMPLOYMENT




## POPULATION



While the graphic representation of the simulation results is helpful, it is necessary to examine summary statistics in order to more accurately assess the model's historical performance. Table 1 contains the following statistics from the ex post simulation: root mean square error (RMSE), mean absolute percentage error (MAPE), and Theil's inequality coefficient (Theil's U). These statistics are provided here for the model's five key variables. In addition, the RMSE is reported for each variable on a percentage basis. Care must be taken in comparing RMSE's for different variables to note the different units in which various variables are measured.

Table 1. Hampton Roads Model Ex Post Simulation Summary Statistics

| Variable | RMSE | MAPE | Theil's U | %RMSE |
|---|---|---|---|---|
| RGRP (millions) | 184.4 | 1.27% | .0068 | 2.23% |
| Income (millions) | 164.6 | 1.22% | .0069 | 2.08% |
| Employment | 7583.0 | 1.21% | .0065 | 2.07% |
| Retail Sales (thousands) | 181.7 | 3.11% | .0184 | 5.14% |
| POP (thousands) | 9.3 | 0.73% | .0040 | 1.25% |

One of the primary advantages of a regional econometric model is its ability to provide insight into the likely local impacts of various external influences. For instance, what would be the effects of variations in key exogenous variables such as defense purchases or interest rates? By varying the actual historical values of key exogenous variables one at a time and then simulating the model, the analyst can compare the model's solutions for key endogenous variables to the model's original solutions which were based on historical values for the exogenous variables. The differences between these two sets of solutions will show the impacts of the various exogenous variables. These impacts can be measured by using either multipliers or impact elasticities.

Multipliers express the ratio of a change in a key endogenous variable to the change in the exogenous variable. Impact elasticities are quite similar to multipliers except that they convert the changes in both endogenous and exogenous variable to percentage terms. Thus, for example, impact elasticities would address what percentage increase in employment would result from a one percent increase in defense purchases.

In order to assess the Hampton Roads model's estimates of the region's sensitivity to external influences, the model was simulated four times for the 1972-1984 period. In addition to the simulation previously reported which used historical values for all exogenous variables, the model was run under three alternate scenarios. Real U. S. GNP was higher by one billion dollars for each year of one simulation, and defense purchases were one billion dollars higher for each year of another. The final simulation was run with a one percent lower commercial paper rate for each year. Only one variable was altered for each of these simulations. The solutions for the five key endogenous variables were then compared to those obtained in the original solution.

The impact elasticities from this experiment are reported in Table 2. These elasticities are useful in that they convert the impacts into percentage terms. This allows for comparisons between the various external influences. The first figure for each variable reports the short-run impact elasticity. It measures the percentage change in the endogenous variable caused by a one percent increase (decrease for the commercial paper rate) of the exogenous variable in the first year. In other words, it shows the percentage change in the model's solutions for the variable in question when the exogenous variable was changed by one percent for 1972 over its actual historical value. Thus, a one percent increase in U. S. GNP would cause the model to predict that Hampton Roads GRP would be .207 percent higher as a result.

The second figure for each variable in Table 2 reports the long-run impact elasticity. This figure shows the average percentage change in the endogenous variable resulting from a one percent higher value for the exogenous variable for all 13 years of the simulation. For example, the table indicates that if defense purchases had been one percent higher each year over the 1972-1984 period, then Hampton Roads GRP would have been .369 percent higher per year on average. The deviation between the short-run and long-run elasticities reflects the lag structure in the model's specification. Note that the elasticity of the commercial paper rate is negative.

Table 2. Hampton Roads Model Impact Elasticities
Short-Run and Long-Run Exogenous Variables

| | U. S. GNP | Defense | COMPAPRT |
|---|---|---|---|
| GRP | .207 | .213 | -.041 |
| | .073 | .369 | -.139 |
| Income | .122 | .136 | -.038 |
| | .043 | .221 | -.104 |
| Employment | .167 | .225 | -.033 |
| | .013 | .342 | -.117 |
| Retail Sales | .122 | .136 | -.074 |
| | .044 | .241 | -.175 |
| Population | -.219 | .064 | -.017 |
| | -.243 | .097 | -.045 |

Examination of Table 2 yields insight into the sensitivity of the Hampton Roads model to national economic developments. In particular, the critical importance of defense spending in Hampton Roads is graphically demonstrated. The model suggests that the local economy is much more sensitive to variations in defense spending than it is to fluctuations in national economic growth (GNP) or developments in financial markets (COMPAPRT). This can be seen clearly by contrasting the short-run and long-run impact elasticities for these exogenous variables in Table 2.

## Forecasts

While the ex post simulation of the model provides insight into its ability to fit the historical data on which it was estimated, the true measure of a model's forecasting ability requires forecasting out of the estimation period. This would involve using the Hampton Roads model to predict the endogenous variables for 1985 and beyond.

Ex post forecasting involves using the model to predict endogenous variables between the estimation period and the present. These results can then be compared to the actual values of the estimated variables. The errors resulting from this process can then be identified and evaluated. However, ex post forecasting normally involves using actual values of the exogenous variables. This tends to bias the errors downward since the forecaster introduces no error into the forecast from the exogenous variables. In other words, if the exogenous variables themselves have to be estimated before using the model to forecast, then any errors in the assumed values of the exogenous variables would presumably cause the model to be even further off in its predictions. In fact, it has been estimated that errors in exogenous variables constitute 10 to 15 percent of the average forecasting errors in regional econometric models.

The lag in the availability of REIS data is such that regional income and employment data is normally available 16 months after the close of the calender year. Thus, an ex post forecast for 1985 and 1986 was undertaken in order to assess the model's forecasting accuracy. The 1985 revisions in the National Income and Product Accounts have necessitated major revisions in the REIS reporting procedure. This has resulted in the need to convert the forecasts into percentage changes due to the discontinuity of the data. Actual values of the primary exogenous variables were utilized for 1985 and 1986. Both dummy variables (RDUMMY, RSDUMMY) were predetermined as was TIME. Productivity figures for each industry were estimated for all three years. Estimates of these secondary exogenous variables were made using Brown's one parameter, linear exponential smoothing technique. The forecasting results are displayed in Table 3.

Table 3. Hampton Roads Model Forecasts

| | 1985 | | | 1986 | | |
|---|---|---|---|---|---|---|
| Variable | Actual | Predicted | Error | Actual | Predicted | Error |
| GRP | 4.9% | 6.5% | +1.6% | 5.2% | 7.0% | +1.8% |
| Personal Income | 4.5% | 4.8% | +0.3% | 6.0% | 5.4% | -0.6% |
| Employment | 4.5% | 7.1% | +2.6% | 3.5% | 6.4% | +2.9% |
| Retail Sales | 8.1% | 2.9% | -5.2% | 2.9% | 6.1% | +3.2% |
| Population | 1.3% | 1.4% | +0.1% | 2.9% | 2.3% | 0.0% |

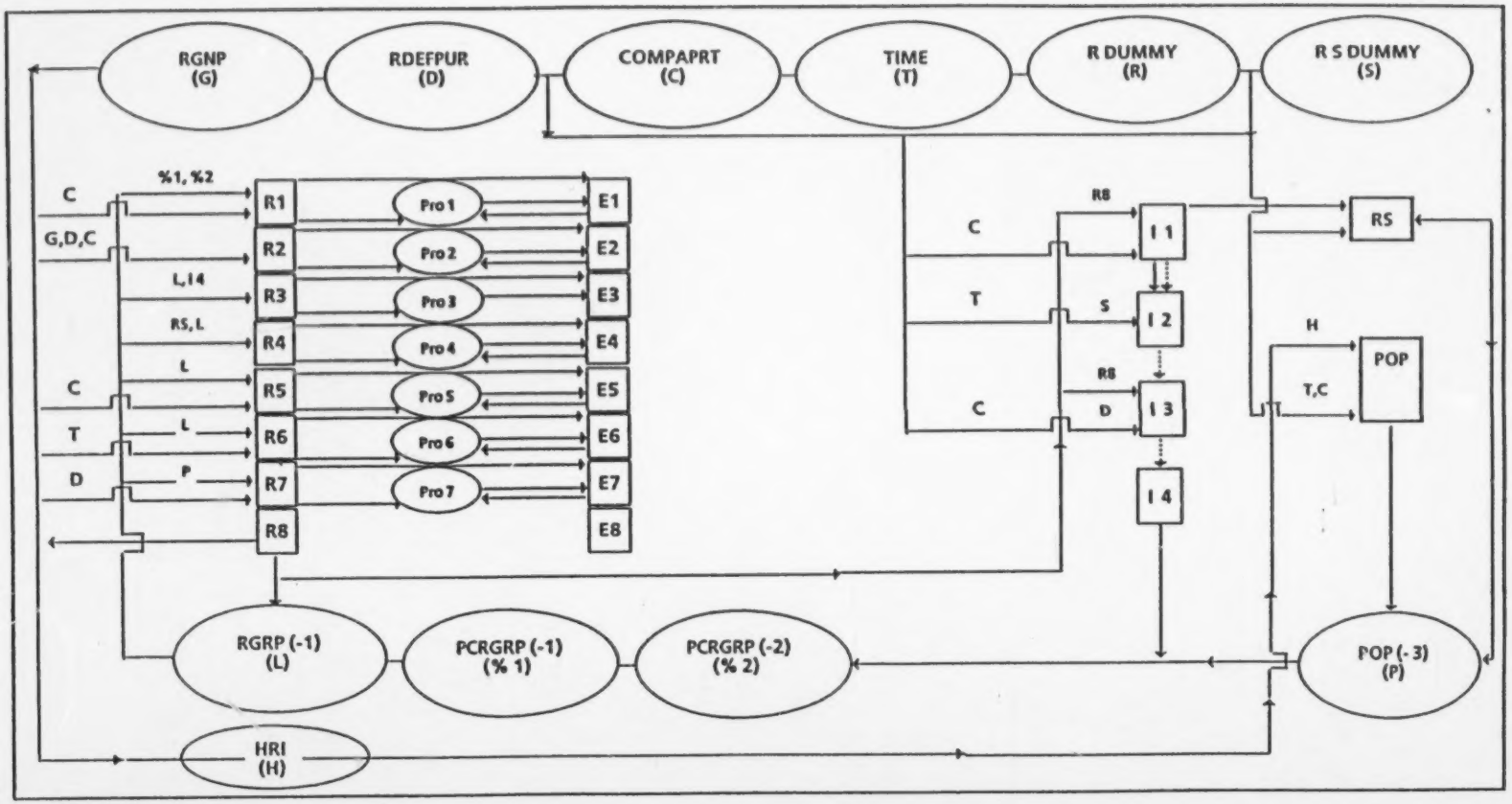
Examination of Table 3 suggests that the model's forecasting accuracy is likely to fall within the parameters established by the ex post simulation results which are reported in Table 1. In fact, the MAPE statistics in Table 1 are well within the averages reported in the regional econometric modeling literature. For example, Rubin (1981) reports that MAPE's less than 10 percent are considered acceptable while those less than 5 percent are considered excellent. To the extent that the model's user is comfortable working with the margins of error reported in Table 1, the Hampton Roads Econometric Model should prove to be a valuable aid for forecasting and planning.

## Summary and Conclusions

This article has described the specification, estimation, simulation and evaluation of an econometric model for Hampton Roads, Virginia. The model was utilized to evaluate the sensitivity of the region's economy to external economic influences. In addition, the model was used to forecast key economic variables over the 1985-1986 period. The ex post simulation error statistics suggest that the model's forecasting accuracy falls well within the standard acceptable levels for regional econometric models. Preliminary analysis of the 1985-1986 forecast errors indicates that they will fall within the parameters established by the ex post simulation. Thus, it appears that the model can be utilized as an aid to planning for both forecasting and policy analysis.

Future development of the model should primarily consist of disaggregation down to the city and county level. Additionally, incorporation of labor force and unemployment equations would further enhance the model's usefulness to regional analysts and planners. Development of a quarterly model which would allow for more timely forecasts is another possible direction for future research.

FIGURE 1
HAMPTON ROADS MODEL



Appendix I

Figure 1 diagrams the structure of the Hampton Roads model. All predetermined variables are indicated by an oval shape. In addition, the ratio of Hampton Roads GRP to U. S. GNP (HRI) is oval shaped although only its denominator is predetermined. In general the outside loop shows the influence of exogenous variables while the inside loop shows endogenous influences. Identities are indicated by broken lines. The rectangular boxes indicate the endogenous variables which fall into the following five categories:

| | | | |
|---|---|---|---|
| Gross Regional Product | R1 through R8 | Taxable Retail Sales | RS |
| Employment | E1 through E8 | Population | POP |
| Income | I1 through I4 | | |

The model is composed of three separate blocks of equations. Block 1 is recursive and contains those sectors which are primarily determined by exogenous and lagged endogenous variables. These sectors include both Gross Regional Product and employment for Construction (R1,E1); Manufacturing (R2,E2); Finance, Insurance, and Real Estate (FIRE)(R5,E5); and Government (R7,E7).

Block 2 consists of nine simultaneous equations. Equations with current values of endogenous variables used as explanatory variables are solved in this block. These include GRP for Transportation, Utilities, and Communication (TUC)(R3); Wholesale and Retail Trade (R4); and Services (R6). Net Earnings by Place of Residence (I1); Transfer Payments (I2); Dividends, Interest, and Rents (I3); and Retail Sales (RS) are also solved in this block as are the identities for Personal Income (I4) and total Gross Regional Product (R8). The remaining seven equations are solved in Block 3 which is recursive.

All of the variables in the model along with their sources are listed and defined in Table A1. The symbols in parentheses refer to the labels utilized in the diagram of Figure 1. The variables' abbreviations are those utilized in a list of the model's equations (available elsewhere). All monetary figures are in 1982 dollars.

Table A1. Variables and Data Sources

| Exogenous Variables | Definition | Source |
|---|---|---|
| RGNP (GNP) | Real Gross National Product (billions) | ERP |
| RDEFPUR (D) | Real Defense Purchases (billions) | ERP |
| COMPAPRT (C) | Six Month Commercial Paper Rate (percent) | ERP |
| TIME (T) | Time Variable (1972=72,1973=73,etc.) | |
| RDUMMY (R) | Dummy Variable for Reagan Years (1981-84=1) | |
| RSDUMMY (S) | Reagan Slope Dummy (=TIME x RDUMMY) | |
| PRO (PRO1-PRO7) | Productivity for each local industry (e.g. PROCON=RGRPCON/ECON) | |
| **Endogenous Variables** | **Definition** | **Source** |
| RGRPCON (R1) | Real Construction GRP (millions) | SVPDC |
| RGRPMAN (R2) | Real Manufacturing GRP (millions) | SVPDC |
| RGRPTUC (R3) | Real TUC GRP (millions) | SVPDC |
| RGRPTRAD (R4) | Real Trade GRP (millions) | SVPDC |
| RGRPFIRE (R5) | Real FIRE GRP (millions) | SVPDC |
| RGRPSERV (R6) | Real Services GRP (millions) | SVPDC |
| RGRPGOVT (R7) | Real Government GRP (millions) | SVPDC |
| RGRP (R8) | Real Total GRP (millions) (R1+...R7) | SVPDC |
| ECON (E1) | Construction Employment | REIS:25 |
| EMAN (E2) | Manufacturing Employment | REIS:25 |
| ETUC (E3) | TUC Employment | REIS:25 |
| ETRADE (E4) | Trade Employment | REIS:25 |
| EFIRE (E5) | FIRE Employment | REIS:25 |
| ESERV (E6) | Service Employment | REIS:25 |
| EGOVT (E7) | Government Employment | REIS:25 |
| ETOTID (E8) | Total Employment (E1+E2+...E7) | REIS:25 |
| RNEPR (I1) | Real Net Earnings by Place of Residence (thousands) | REIS:5 |
| RTP (I2) | Real Transfer Payments (thousands) | REIS:5 |
| RDIR (I3) | Real Dividends, Interest, & Rents (thousands) | REIS:5 |
| RTPIID (I4) | Real Total Personal Income (I1+...I3) (thousands) | REIS:5 |
| RHRERTS (RS) | Real Taxable Retail Sales (thousands) | VaDTax |
| POP (POP) | Population (thousands) | REIS:5 |

Data Source Legend

ERP Economic Report of the President. U. S. Government Printing Office. Washington, DC.

SVPDC 1987 Economic Outlook. Southeastern Virginia Planning District Commission. Chesapeake, Virginia.

REIS:25 U. S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System. Table 25.00 "Full-time and Part-time Employees by Major Industry."

REIS:5 U. S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System. Table 5.00 "Personal Income by Major Source and Earnings by Major Industry."

VaDTax Taxable Sales in Virginia Counties and Cities Based on Retail Sales Tax Revenue. Annual Reports. Commonwealth of Virginia, Department of Taxation. Richmond, Virginia.

Discussion

The Hampton Roads model contains seven industrial sectors as opposed to the four contained in the Mobile model. This has allowed inclusion of an exogenous interest rate variable (COMPAPRT) to reflect financial market impacts on selected segments of the local economy (Construction, Manufacturing, and FIRE). While the Mobile model included lagged local manufacturing investment, a lack of consistent data for Hampton Roads precluded its use in the Hampton Roads model. Also, employment by industry and total are in the model while labor force and unemployment are not. The latter two variables were, however, treated in the Mobile model. They are excluded from the present model due to the inconsistency between BEA employment data and Virginia Employment Commission (VEC) data on labor force and unemployment. Although many of the equations in the present model follow the Mobile model design, there are a number of distinctions which merit discussion.

The division of GRP into seven industries allows greater refinement in the specification of each industry's individual equation. The Construction equation (R1) includes an interest rate variable in order to capture the critical impact of the cost of financing construction activity. In addition, the highly volatile output of this sector was best modeled by a type of accelerator format similar to the treatment of investment in large national models. This is accomplished by showing Construction GRP to be dependent on the percentage growth in total GRP lagged both one and two years. Although the R2 for this specification is relatively low, it exceeded those obtained from a number of alternative specifications.

The interest rate variable is also included in the Manufacturing equation (R2). Like the Mobile model, U. S. GNP is included in this equation to capture the economic performance of the rest of the country to which the manufacturing sector sells much of its output. The importance of local defense related shipbuilding activity is accounted for by the inclusion of real defense purchases as a third explanatory variable.

The interest rate variable is also included in the FIRE equation (R5). This equation follows the Mobile model by including lagged Gross Regional Product as an explanatory variable. Lagged GRP is also included in the Trade (R4) and TUC (R3) equations. However, unlike the Mobile specification, retail sales are included in the Trade equation and Personal Income included in the TUC specification. Personal Income is also included in the Service (R6) equation along with Time. The latter variable is included in the Mobile specification while the former is not.

The importance of the military to the local economy is particularly pronounced in the Government sector of GRP. Thus, real defense purchases are included in the Government equation (R7). The rapid population growth in the region leads to demands for increases in public services. However, these increased services are often provided with a significant lag. This effect on local and state government provided services is accounted for by including population lagged three years.

The employment equations (E1-E8) are identical to the Mobile model specification. Employment in each industry is determined by that industry's GRP along with average labor productivity. The model was structured with productivity in each industry treated as an exogenous variable. Since the model estimates both GRP and employment by industry, it would be possible to include identities which would have the model estimate productivity. However, experiments with this design resulted in the model becoming significantly more difficult to solve and much less accurate in its employment estimates. In that the employment estimates do not feed into any other equations, it seemed appropriate to treat productivity as exogenous as is apparently done in the Mobile model.

The income equations are substantially different from those in the Mobile model. Real Net Earnings by Place of Residence (I1) are a function of GRP rather than total employment as was the case in the Mobile treatment. In addition, interest rates are included as an explanatory variable. Transfer Payments (I2) are shown to depend on real Net Earnings rather than GRP. It would seem that fluctuations in the local economy which result in increases in transfer payments would be most felt in labor income. Thus, earnings are used rather than GRP. Also, rather than Population the Hampton Roads model uses Time as a second explanatory variable. Finally, the current model has included a slope dummy which captures the slower growth of transfer payments during the Reagan years. So too, Dividends, Interest, and Rents (I3) receives a different treatment in the Hampton Roads model. Included as explanatory variables are GRP, the interest rate, and a dummy variable which reflects the more favorable investment climate of the Reagan years.

Population growth (POP) is assumed to be affected by the performance of the region's economy relative to the national economy. This relationship is captured by the Hampton Roads Index (HRI) which is merely the ratio of Hampton Roads GRP to U. S. GNP. In addition, the upward trend of the region's population is accounted for by including Time as an explanatory variable. Interest rates are also included in the population equation in order to account for the ease or difficulty of relocating to Hampton Roads. Interest rates are also used to explain retail sales (RS). In addition, net earnings are included in the retail sales equation rather than Personal Income as was the case in the Mobile model. Fluctuations in transfer payments are likely to be made up by earned income and thus should not be used to explain variation in retail sales. So too, variations in property income (Dividends, Interest, and Rents) should have less of an effect on retail sales than labor income. Thus, only the labor income (Net Earnings) component of Personal Income is included in the retail sales equation.

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# HISTORICAL SUMMARY

## Performance of Indicators Over the Business Cycle

## GENERAL INFORMATION

For those interested in studying the business cycle in Virginia, this publication includes several of the economic time series for which data is readily available on a monthly basis. From time to time, new series will be added and, if necessary, others presently included will be discontinued.

### BUSINESS CYCLE TURNING POINTS

The shaded spaces on the charts represent the 1973-75, 1980, and 1981-82 recessions as designated by the National Bureau of Economic Research (NBER). The beginning of a recession is defined as the month when aggregate economic activity in the U. S. reaches a cyclical high, from which it begins to turn down, and the end as the month when it reaches a cyclical low, from which it begins to turn up. According to NBER, the 1973-75 recession began in November 1973 and ended in March 1975, the 1980 recession began in January 1980 and ended in July 1980, and the 1981-82 recession began in July 1981 and ended in November 1982.

### SEASONAL ADJUSTMENT

To correlate changes in a time series and changes in the business cycle it is desirable

### SEASONAL ADJUSTMENT (continued)

to eliminate, insofar as possible, the effect of irrelevant factors from the data comprising the series. All series currently published in Indicators have been adjusted to minimize regular seasonal fluctuations in the data in order to show only activity related to the business cycle.

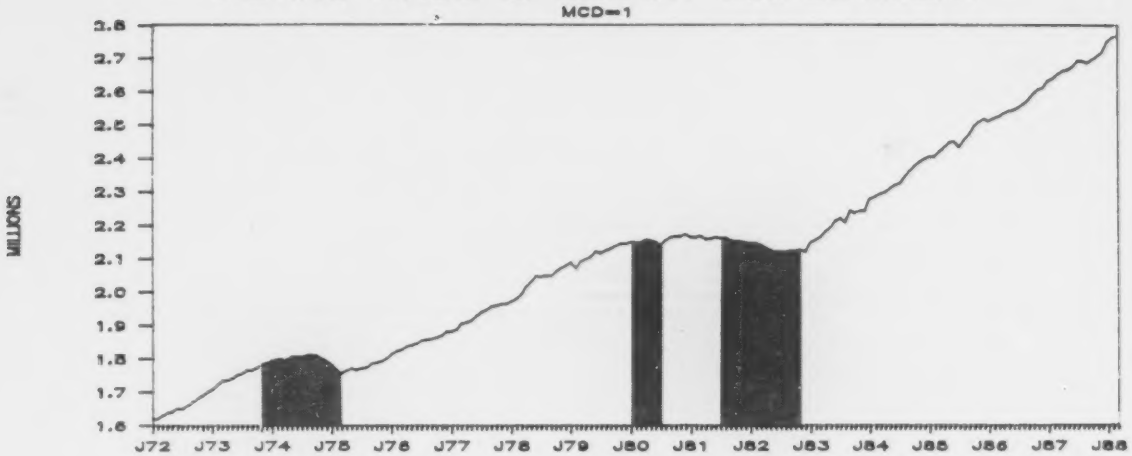
### MONTHS FOR CYCLICAL DOMINANCE (MCD)

After seasonal adjustment there often remains a significant degree of purely random change, the effect of which can be minimized with a moving average equal in length to the MCD of the series. The MCD is an estimate of the length of the moving average which will reveal the cyclical pattern among the welter of random fluctuations in the data--the greater the MCD the more random and less cyclically significant are monthly changes in the series. Where noted, charts of historical data in this publication represent seasonally adjusted figures which have been averaged according to the MCD of each series.

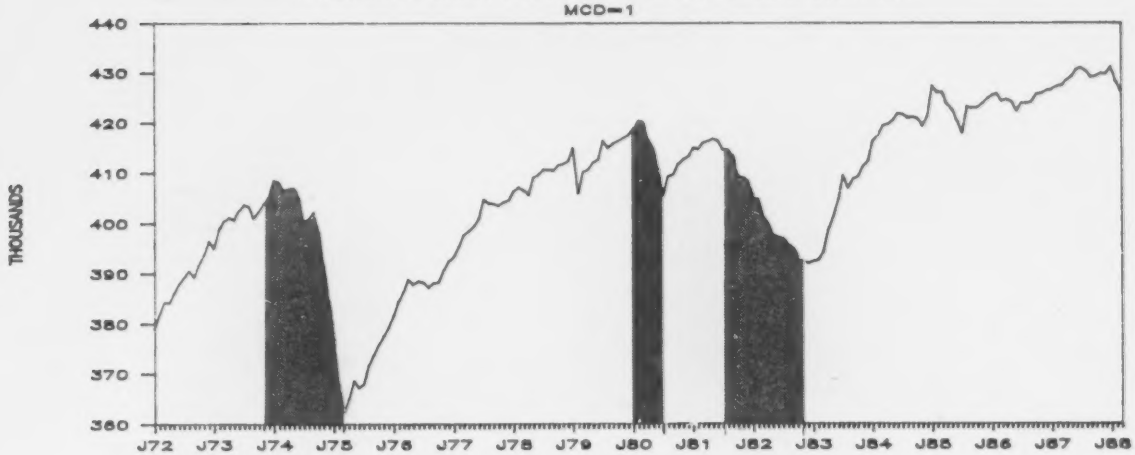
## DATA SOURCES

| | |
|---|---|
| Nonagricultural Wage and Salary Employment | Virginia Employment Commission (VEC) |
| Manufacturing Employment | VEC |
| Total Unemployment Rate | VEC |
| Average Weekly Initial Claims | VEC |
| Insured Unemployment Rate | VEC |
| Unemployment Insurance Final Payments | VEC |
| Average Manhours | VEC |
| Average Hourly Earnings | VEC |
| Average Weekly Earnings | VEC |
| Average Workweek | VEC |
| New Business Incorporations | Virginia State Corporation Commission |
| Valuation of Building Permits - 18 Cities | Local Building Inspectors |
| New Vehicle Registrations | Virginia State Division of Motor Vehicles |
| Electrical Power Sales | Virginia Power, Appalachian Power Co., Delmarva Electric Co., Tennessee Power Company |
| Taxable Retail Sales | Virginia State Department of Taxation |
| Taxable Retail Sales/CPI | Virginia State Department of Taxation |

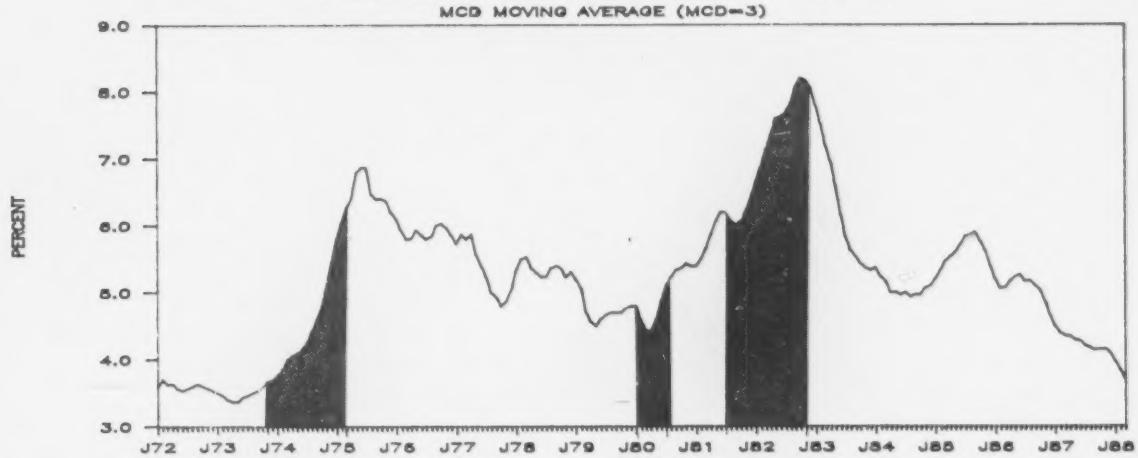
## NONAG WAGE & SALARY EMPLOYMENT




## MANUFACTURING EMPLOYMENT

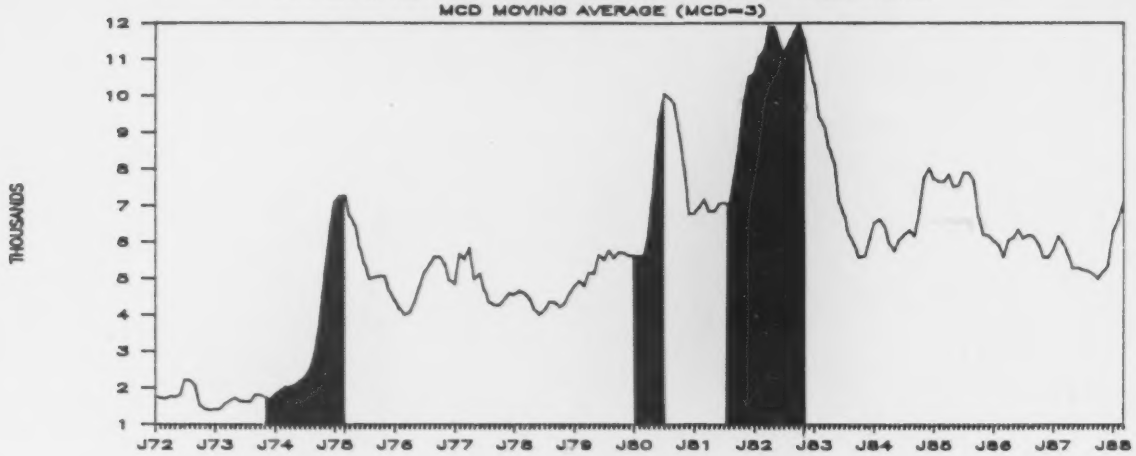



## TOTAL UNEMPLOYMENT RATE



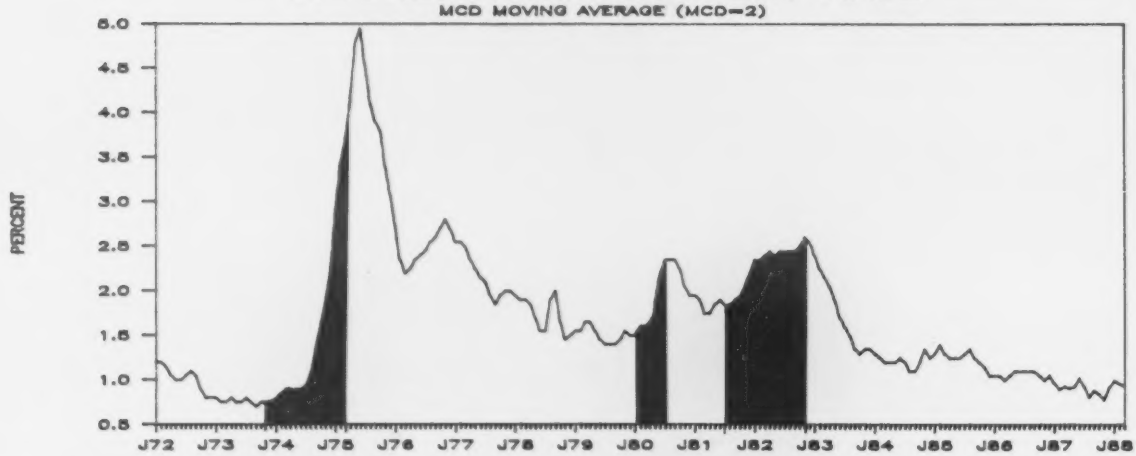
## AVERAGE WEEKLY INITIAL CLAIMS

MCD MOVING AVERAGE (MCD=3)



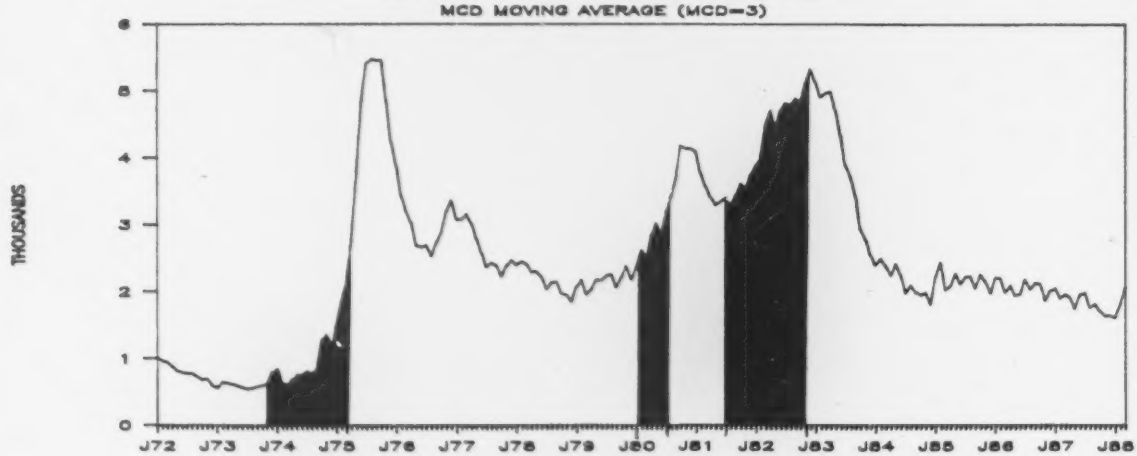

## INSURED UNEMPLOYMENT RATE

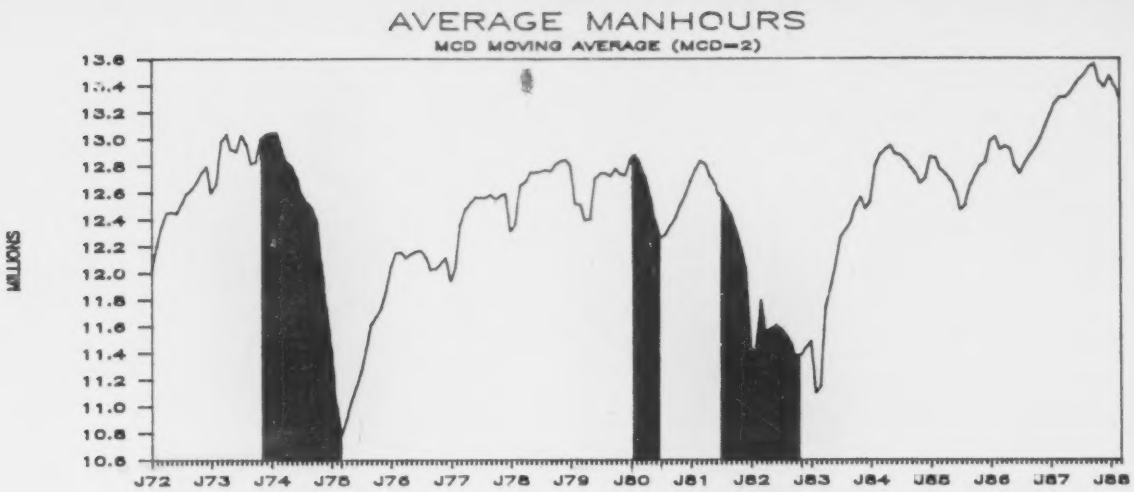
MCD MOVING AVERAGE (MCD=2)

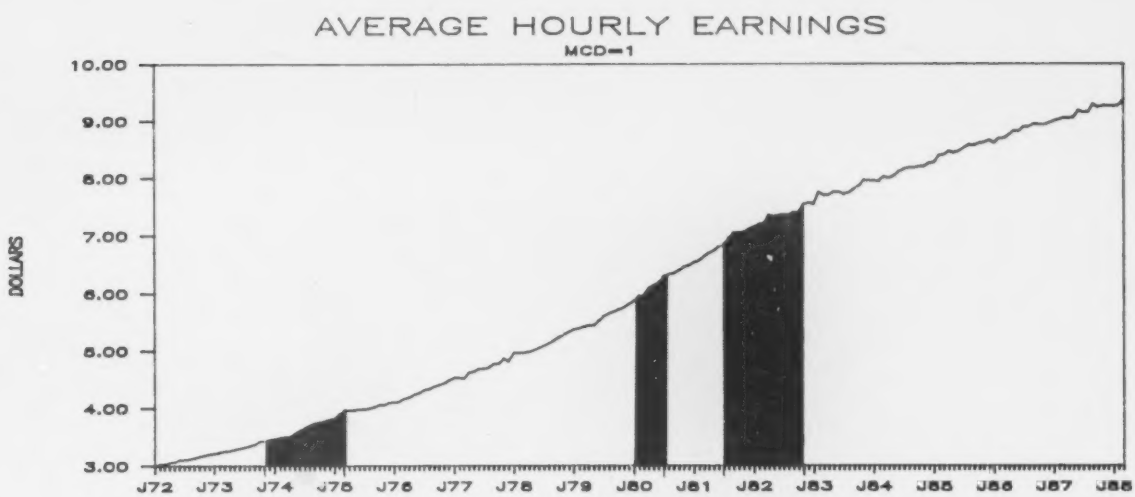


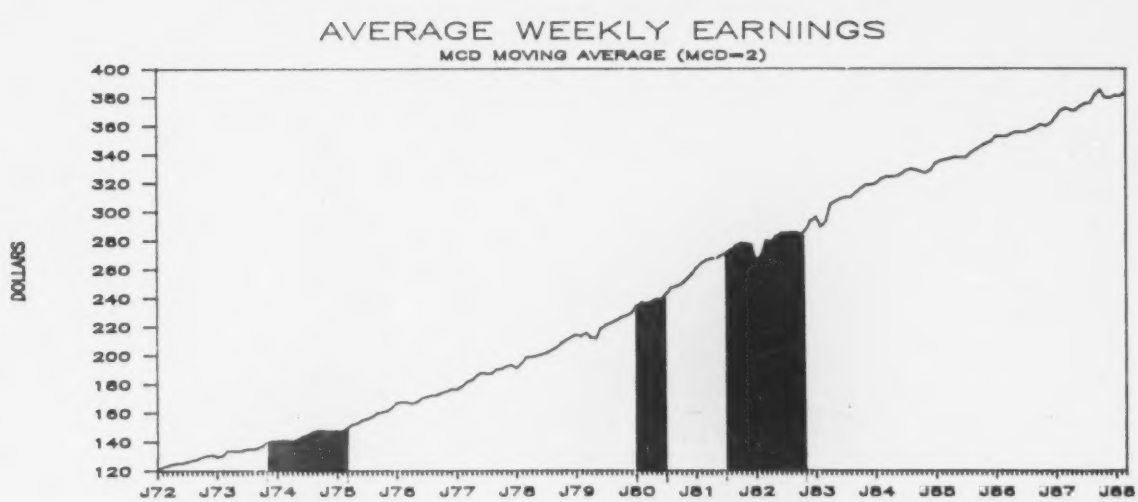

## U. I. FINAL PAYMENTS

MCD MOVING AVERAGE (MCD=3)



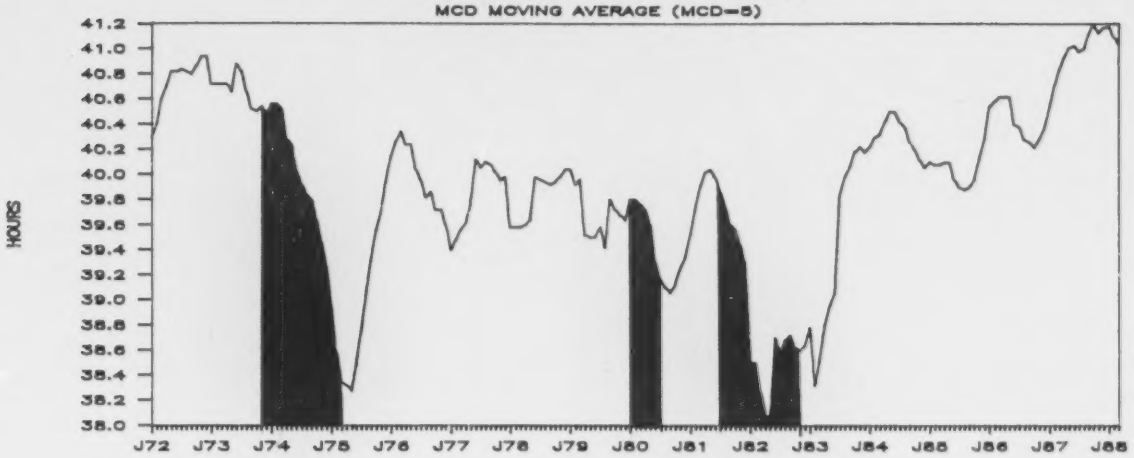

AVERAGE MANHOURS
MCD MOVING AVERAGE (MCD=2)
MILLIONS
13.6
13.4
13.2
13.0
12.8
12.6
12.4
12.2
12.0
11.8
11.6
11.4
11.2
11.0
10.8
10.6
J72 J73 J74 J75 J76 J77 J78 J79 J80 J81 J82 J83 J84 J85 J86 J87 J88


AVERAGE HOURLY EARNINGS
MCD=1
DOLLARS
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
J72 J73 J74 J75 J76 J77 J78 J79 J80 J81 J82 J83 J84 J85 J86 J87 J88


AVERAGE WEEKLY EARNINGS
MCD MOVING AVERAGE (MCD=2)
DOLLARS
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
J72 J73 J74 J75 J76 J77 J78 J79 J80 J81 J82 J83 J84 J85 J86 J87 J88

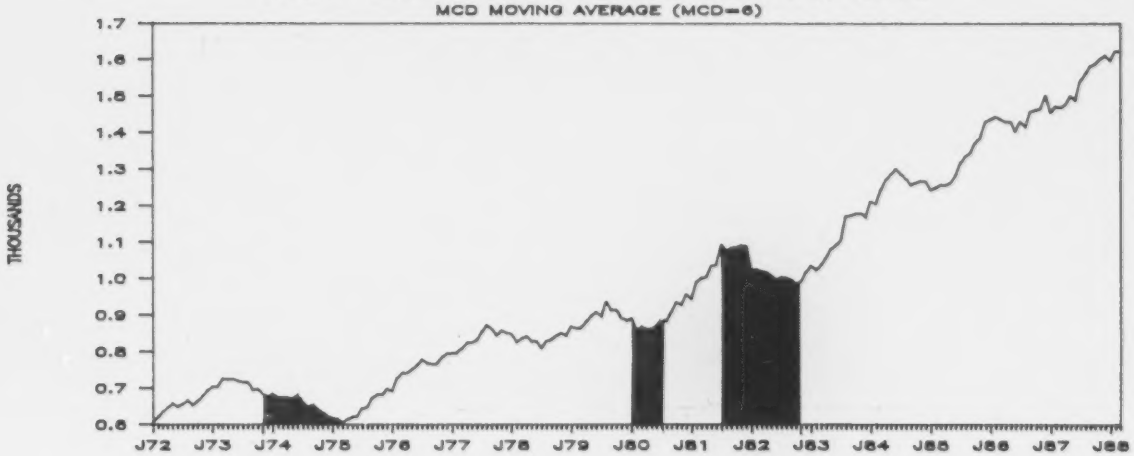
## AVERAGE WORKWEEK

MCD MOVING AVERAGE (MCD=6)



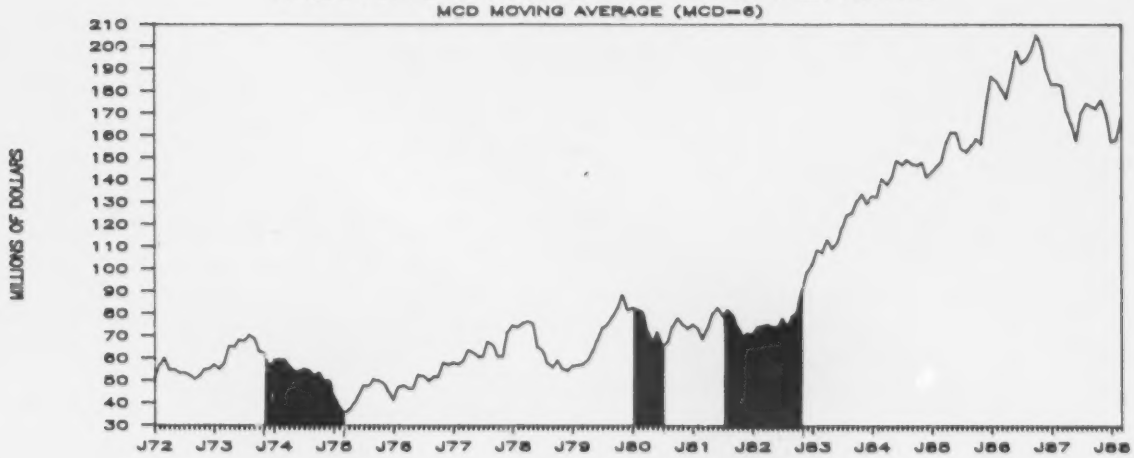

## NEW BUSINESS INCORPORATIONS

MCD MOVING AVERAGE (MCD=6)



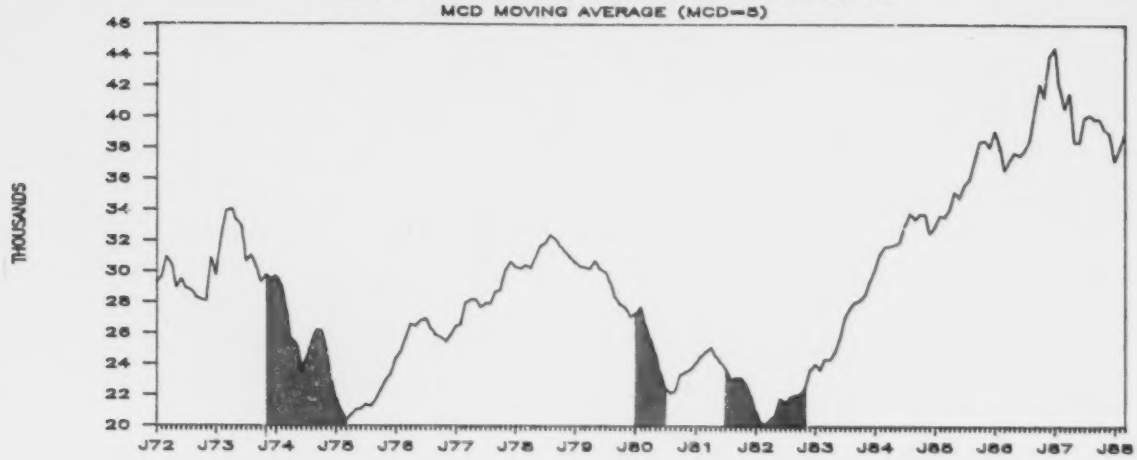

## VALUATION OF BUILDING PERMITS

MCD MOVING AVERAGE (MCD=6)



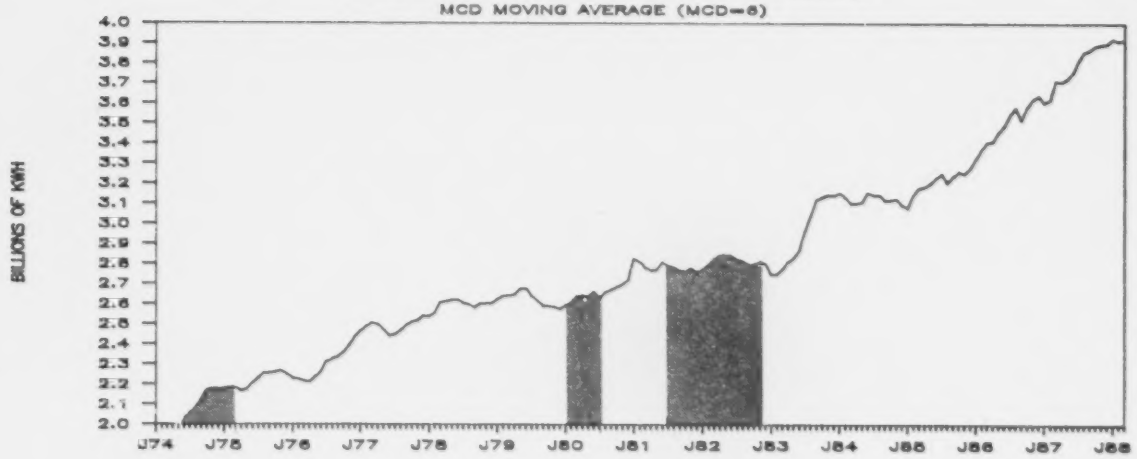
## NEW VEHICLE REGISTRATIONS

MCD MOVING AVERAGE (MCD=5)



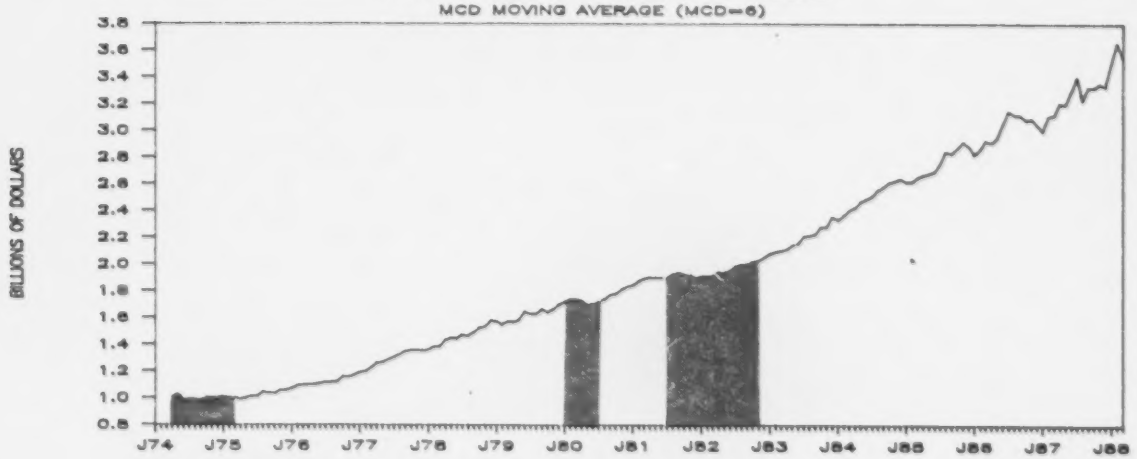

## ELECTRICAL POWER SALES

MCD MOVING AVERAGE (MCD=6)




## TAXABLE RETAIL SALES

MCD MOVING AVERAGE (MCD=6)



TAXABLE RETAIL SALES/CPI
MCD MOVING AVERAGE (MCD=6)
1967 DOLLARS (BILLIONS)
1.1
1.0
0.9
0.8
0.7
0.6
0.5
J74
J75
J76
J77
J78
J79
J80
J81
J82
J83
J84
J85
J86
J87
J88

*Virginia Employment Commission*
*Economic Information Services Division*
*Post Office Box 1358*
*Richmond, Virginia 23211*

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***Virginia Employment Commission***

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# VIRGINIA ECONOMIC INDICATORS

VOL. XX NO. 2

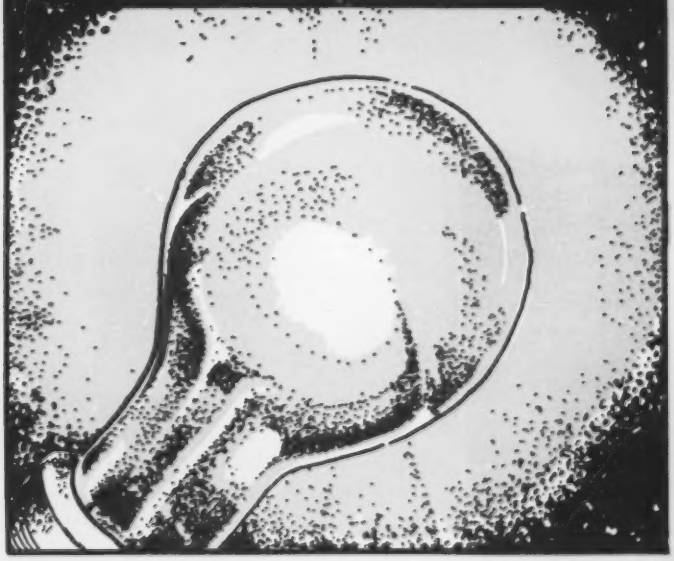
## 2nd QUARTER 1988 DATA

### BUILDING PERMITS

### NEW VEHICLE REGISTRATION

### MANUFACTURING EMPLOYMENT

### SALES OF ELECTRICAL POWER



Virginia Employment Commission

# FOREWORD

This publication is designed to depict the movement of Virginia's key economic indicators in graphic and tabular form with accompanying narrative analysis.

We welcome any comments, suggestions, or questions concerning Virginia Economic Indicators. Please contact Dolores A. Esser, Director, Economic Information Services Division, P. O. Box 1358, Richmond, Virginia 23211, (804) 786-7496, for additional information or explanation of the contents of this document.

# TABLE OF CONTENTS


| | Page |
|---|---|
| FOREWORD | iii |
| ECONOMIC OUTLOOK-U. S. | 1 |
| HIGHLIGHTS VIRGINIA ECONOMIC INDICATORS, SECOND QUARTER 1988 | 3 |
| VIRGINIA INDICATORS, SECOND QUARTER DATA | 4 |
| EMPLOYMENT AND UNEMPLOYMENT INDICATORS, JANUARY 1987 TO JUNE 1988 | 6 |
| o Nonagricultural Wage & Salary Employment | |
| o Manufacturing Employment | |
| o Total Unemployment Rate | |
| o Average Weekly Initial Claims | |
| o Average Weekly Insured Unemployment Rate | |
| o U. I. Final Payments | |
| MANUFACTURING PRODUCTION WORKER INDICATORS, JANUARY 1987 TO JUNE 1988 | 8 |
| o Average Weekly Hours | |
| o Average Manhours | |
| o Average Hourly Earnings | |
| o Average Weekly Earnings | |
| BUSINESS INDICATORS, JANUARY 1987 TO JUNE 1988 | 10 |
| o New Business Incorporations | |
| o Valuation of Building Permits | |
| o New Vehicle Registrations | |
| o Electrical Power Sales | |
| o Taxable Retail Sales | |
| DATA SUMMARY, JUNE 1988 | 12 |
| SUMMARY: MOVEMENT OF INDICATORS, JANUARY 1987 TO JUNE 1988 | 12 |
| DATA SUMMARY, APRIL AND MAY 1988 | 13 |
| THE VIRGINIA LEADING AND COINCIDENT INDEXES | 14 |
| AN ANALYSIS OF VIRGINIA'S 1987 MANUFACTURING EXPORTS | 16 |
| HISTORICAL SUMMARY, PERFORMANCE OF INDICATORS OVER THE BUSINESS CYCLE | 19 |

# VIRGINIA ECONOMIC INDICATORS

ECONOMIC OUTLOOK-U. S.

VOL. XX, NO. 2

SECOND QUARTER DATA

## Second Quarter Exhibits Strong Domestic Growth

- o Gross National Product (GNP) grew by an impressive 3.3 percent in the second quarter, down slightly from the first quarter's 3.6 percent gain, but still well ahead of most projections. The first quarter's gain had been due to enormous export growth.
  - Strong second quarter growth was exhibited in both final sales (+6.5 percent) and final domestic purchases (+4.4 percent). The growth rates of these two aggregates have returned to mid-1987 levels.
  - The current strength was largely in two areas:
    (1) Renewed consumer spending for durables.
    (2) Business expenditures for capital plant and equipment.
- o The U. S. unemployment rate dropped from 5.7 percent in the first quarter to 5.4 percent in the second quarter, the lowest level in over a decade. June employment at 115.0 million was at an all-time high. Manufacturing job gains led the way, fueled by strong demand for exports and consumer durables.
- o The good growth in the first half of 1988 has been in marked contrast to many of the "gloom and doom" forecasts made after the October 1987 stock market plunge. Virginia Economic Indicators was one of the few publications that predicted continued growth fueled by exports in 1988.
- o The gains made in the first half of the year, however, have not been completely without penalties.
  - The strong demand caused inflation to quicken to 4.8 percent on an annual basis in the second quarter, up from only 3.4 percent in the first quarter and the 3.7 percent average for 1987.
  - Also, domestic demand has caused the rate of improvement in the U. S. trade deficit to slow from earlier in the year. Higher imports caused the merchandise deficit to rise from $9.8 billion in May to $12.5 billion by June. Future progress on the trade deficit is likely to be slow unless imports can be held in check.

## Outlook is for Good Growth for the Remainder of 1988

- o Employment and production statistics suggest a 2.7 percent GNP gain for third quarter and a 3.9 percent GNP increase for all of 1988.
- o Historically, election year economies are usually pretty strong.
- o Inflation is likely to be higher--up to a 4.1 percent average in 1988 from a 3.7 percent 1987 average. The summer's drought will up food prices, adding marginally to inflation.
- o With the raising of the discount rate in early August, the Federal Reserve has shifted from an accommodative to a more restrictive monetary policy

because of the increased inflationary threat caused by the recent strong growth. Very accommodative Fed policy since the October 1987 plunge on Wall Street no doubt helped ward off recession in 1988. Now, however, the Fed is clearly more concerned about inflation than recession.

- As a result of the Fed's new anti-inflation policy, interest rates will move up from a prime rate of 8.8 percent in the second quarter to a 10.6 percent prime rate by year-end and a 9.4 percent prime rate average for 1988.

- The increased interest rates will reduce housing starts to 1.45 million units in 1988, down from 1.63 million units in 1987.

Outlook for 1989 Brings Some Uncertainties

- The recent strong demand, the increase in inflation, and the more restrictive monetary policy make a mild adjustment period in late 1989 or 1990 seem more likely.

- Regardless of the outcome of this November's presidential election, taxes will likely have to be raised, at least marginally, to keep the federal budget deficit from growing more out of hand.

- Inflation is likely to be higher, around 4.7 percent, in 1989 even with a possible downturn by mid-year. The labor force is growing slowly with fewer new people available for entry level jobs, plant utilization is near capacity, and the dollar may even sink a little lower than it is now.

- The recently enacted trade bill will put more pressure on the next president to do something about protecting certain domestic industries. Any downturn will intensify these pressures.

- Environmental concerns and the shifting mood of Congress away from de-regulation will likely bring on more business restraints.

William F. Mezger

# HIGHLIGHTS
# VIRGINIA ECONOMIC INDICATORS
## SECOND QUARTER 1988

- During Second Quarter 1988, four new records were set by the Virginia economic indicator series.
  - Nonagricultural wage and salary employment reached 2,774,200 jobs in April, then after pausing in May, increased to a new high of 2,783,000 jobs in June. This June was an impressive 106,000 jobs above June 1987 for a still very strong 4.0 percent yearly job gain.
  - Average weekly earnings of Virginia's factory workers reached a new high in April of $385.96. This was a gain of 4.3 percent in weekly wages over April 1987.
  - Confidence in the business outlook caused new business incorporations to soar to a new high of 1,754 in June, 10.6 greater than during the similiar year earlier period.
- In addition to the above:
  - The total unemployment rate in April on a seasonably adjusted basis was unchanged from March at 3.6 percent, but this was still at the lowest level recorded since September 1973, over 14 years ago.
  - Unemployment insurance final payments fell to 1,476 in April, the lowest level recorded since December 1974.
- According to the Bureau of Labor Statistics of the U. S. Department of Labor, productivity in the nation declined at a 2.2 percent annual rate during Second Quarter 1988 in the business sector, as output rose 3.5 percent and hours of all persons engaged in the sector increased 5.9 percent (seasonally adjusted annual rates). This was the first decline in business productivity since 1986. During First Quarter 1988, productivity had increased 3.5 percent. Although productivity declined in the April-June period, hours increases were the largest since First Quarter 1984. In Second Quarter 1988, employment rose 4.8 percent and average weekly hours increased 1.1 percent.
- The CPI for All Urban Consumers averaged 117.5 (1982-4=100) in Second Quarter 1988. This was 1.2 percent above the 116.1 average for First Quarter 1988 The Second Quarter 1988 average was 3.9 percent higher than the Second Quarter 1987 average. This compared to the 3.8 percent second-quarter to second-quarter rise between 1986 and 1987.
- According to the Bureau of Economic Analysis, Virginia per capita income was $16,322 in 1987, up 5.6 percent from $15,461 in 1986. The 1985-86 gain had been 6.4 percent. Virginia ranked tenth highest among the states in per capita income.
- Coal production in Virginia continued to run ahead of last year. For the first six months of 1988, 23,531,000 short tons had been mined compared to 20,677,000 short tons in the similar period of 1987. This represented an increase of 13.8 percent. Virginia production showed the greatest percentage increase of any coal-producing state east of the Mississippi for the six-month period.

# VIRGINIA INDICATORS
SECOND QUARTER DATA

## Series Mark Time in Second Quarter

Second quarter was yet another period in which the Virginia indicators overall were noted for showing relatively little movement. Aside from the still fairly strong nonagricultural wage and salary employment series, most of the indicators experienced insignificant fluctuations, just a hair below the records most of them set in the last half of 1986 and in 1987. Many of these records were caused by attempts on the part of business and the public to get ahead of changes taking place in the tax laws at that time. What movement that did take place this quarter was largely caused by the seasonal adjustment factors and was relatively meaningless. As often happens in a presidential election year, especially one in the mature stage of a recovery, the economy seems to be marking time until after the November election.

In spite of the absence of significant movement among the series, still some records were set. Nonfarm employment reached new highs in April (2,774,200) and June (2,783,000). Average weekly earnings hit a new high of $385.96 in April, and new business incorporations soared to 1,754 in June. Both the total unemployment rate (3.6 percent) and U. I. final payments (1,476) were at 14-year lows in April.

April was the best month of the quarter by a narrow margin with seven series up, four unchanged, and four down. June followed with seven series up and eight down. As has often been the case recently, the mid-month exhibited the weakest performance. May had six series up, two unchanged, and seven down.

The six-month moving average of rising indicators (page 12) serves to illustrate the quarter's performance. The moving average enhances analysis because it smooths out much of the irregularity present in many of the individual series.

## Still, Four New Records Set, Two Series Best in 14 Years

Nonagricultural wage and salary employment, setting new records of 2,774,200 in April and 2,783,000 in June, continued to be the best performing indicator. Although up on an unadjusted basis in May, seasonally adjusted the May nonagricultural employment figure was practically unchanged from April. The services, trade, construction, finance, and transportation components of nonfarm employment continued to be very strong.

Factory employment showed practically no change from March to April, then increased in May and June, but was still just below the record level set in January 1988.

The four unemployment-related indicators were two positive and two unchanged in April, then were mostly negative in May and June, reflecting a few layoffs at that time in knit textiles. Their movement for the three months, however, was over a relatively narrow range. The April total unemployment rate, which was unchanged from March at 3.6 percent, was at a 14-year low. April saw final unemployment insurance payments fall to 1,476, also the lowest level in 14 years.

The four production worker series were largely positive in April, mostly negative in May, and half up and half down by June. These series seem to have lost some of their "zip" of a few quarters ago when they were regularly setting new records, but overall movement was quite small. Average weekly earnings did, however, climb to a record $385.96 in April before dropping off by $2.38 in June.

The sometimes volatile business-related series lived up to their reputations, being fairly negative in April, fairly positive in May, and then off again in June. New business incorporations fell sharply in April then made good gains in May and June, ending the quarter at the all-time record level of 1,754. Valuations of building permits in April were only 64 percent of March's $221 million level, which had been the second highest figure on record, but then recovered to fairly respectable levels in May ($197.2 million) and June ($192.6 million). Motor vehicle registrations dropped about 3,500 in April to 37,472, then hovered within a few hundred of that figure for both May and June. Electric power sales were up slightly in April, then trailed off in May and June, finishing the quarter at 3,822.8 million kilowatt hours, the lowest level in over a year. Taxable retail sales were off in April then improved in May and June, but were still about $953 million below January's record of $4,397 million.

William F. Mezger

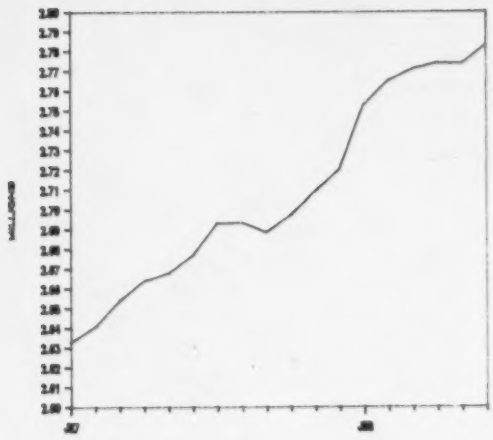
EMPLOYMENT AND UNEMPLOYMENT INDICATORS
January 1987 to June 1988

| | Nonagricultural Wage & Salary Emp.* (Thousands) | | Manufacturing Employment* (Thousands) | | Total Unemployment Rate* (Percent) | |
|---|---|---|---|---|---|---|
| 1987 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 2,588.4 | 2,633.2 | 423.3 | 426.7 | 4.8 | 4.3 |
| February | 2,588.0 | 2,640.8 | 424.7 | 427.3 | 4.8 | 4.4 |
| March | 2,622.3 | 2,654.1 | 425.8 | 427.5 | 4.6 | 4.4 |
| April | 2,653.5 | 2,664.2 | 427.2 | 428.5 | 4.2 | 4.3 |
| May | 2,681.3 | 2,668.0 | 427.5 | 429.2 | 4.1 | 4.2 |
| June | 2,711.8 | 2,677.0 | 431.1 | 430.7 | 4.3 | 4.3 |
| July | 2,695.9 | 2,693.2 | 429.8 | 431.1 | 4.1 | 4.1 |
| August | 2,693.7 | 2,693.7 | 431.3 | 430.4 | 3.9 | 4.1 |
| September | 2,704.8 | 2,688.7 | 432.6 | 429.2 | 3.9 | 4.2 |
| October | 2,718.9 | 2,697.3 | 432.3 | 429.3 | 3.9 | 4.1 |
| November | 2,733.7 | 2,709.3 | 432.5 | 429.9 | 4.0 | 4.1 |
| December | 2,744.7 | 2,720.2 | 430.6 | 429.7 | 4.0 | 4.1 |
| 1988 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 2,706.2 | 2,753.0 | 427.8 | 431.3 | 4.2 | 3.8 |
| February | 2,709.9 | 2,765.2 | 426.2 | 428.3 | 4.1 | 3.7 |
| March | 2,737.8 | 2,771.1 | 423.8 | 426.4 | 3.8 | 3.6 |
| April | 2,763.1 | 2,774.2 | 425.0 | 426.3 | 3.5 | 3.6 |
| May | 2,787.5 | 2,773.6 | 425.3 | 427.0 | 3.6 | 3.7 |
| June | 2,816.4 | 2,783.0 | 429.0 | 428.6 | 3.8 | 3.8 |

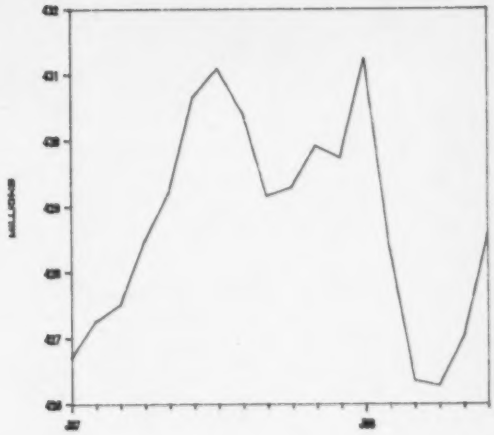
| | Average Weekly Initials Claims (Number) | | Avg. Wkly. Insured Unemployment Rate (Percent) | | U. I. Final Payments (Number) | |
|---|---|---|---|---|---|---|
| 1987 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 9,593 | 6,153 | 1.3 | 0.8 | 1,970 | 1,885 |
| February | 7,054 | 6,237 | 1.3 | 1.0 | 1,849 | 1,922 |
| March | 4,828 | 5,549 | 1.1 | 0.9 | 2,327 | 1,991 |
| April | 4,484 | 5,263 | 0.9 | 0.9 | 2,661 | 1,828 |
| May | 3,519 | 5,093 | 0.8 | 0.9 | 1,917 | 1,661 |
| June | 4,810 | 5,561 | 0.9 | 1.1 | 2,268 | 2,257 |
| July | 5,192 | 5,115 | 0.7 | 0.8 | 1,834 | 1,703 |
| August | 3,530 | 4,979 | 0.7 | 0.9 | 1,639 | 1,827 |
| September | 3,478 | 5,326 | 0.7 | 0.9 | 1,454 | 1,800 |
| October | 3,535 | 4,751 | 0.6 | 0.8 | 1,288 | 1,626 |
| November | 5,329 | 5,511 | 0.7 | 0.8 | 1,177 | 1,653 |
| December | 11,354 | 5,814 | 1.1 | 1.0 | 1,510 | 1,640 |
| 1988 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 11,715 | 7,558 | 1.5 | 1.0 | 1,655 | 1,576 |
| February | 7,323 | 6,435 | 1.3 | 1.0 | 1,938 | 2,012 |
| March | 6,252 | 7,236 | 1.1 | 0.9 | 2,442 | 2,098 |
| April | 4,901 | 5,759 | 0.9 | 0.9 | 2,157 | 1,476 |
| May | 4,470 | 6,507 | 0.8 | 0.9 | 1,945 | 1,685 |
| June | 5,521 | 6,375 | 0.8 | 1.0 | 1,964 | 1,960 |

*These series have been adjusted to First Quarter 1987 benchmarks.

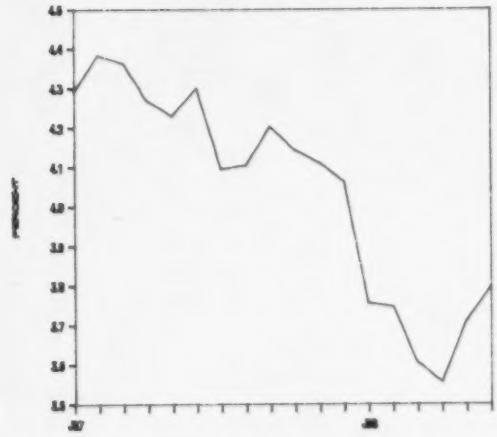
NONAG W & S EMPLOYMENT



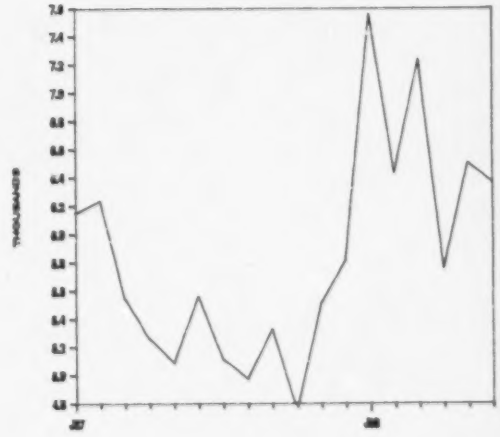
MANUFACTURING EMPLOYMENT



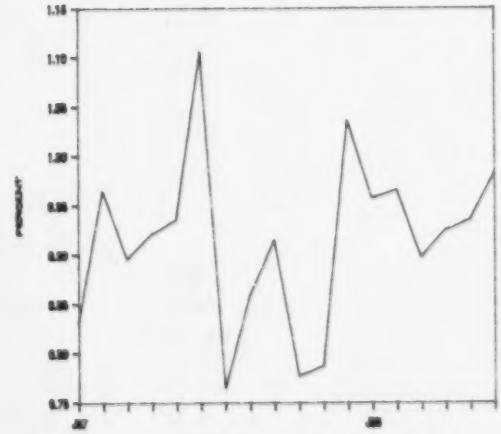
TOTAL UNEMPLOYMENT RATE



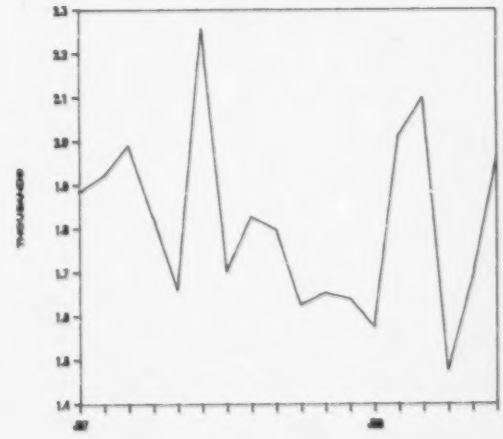
AVG. WEEKLY INITIAL CLAIMS



INSURED UNEMPLOYMENT RATE



U.I. FINAL PAYMENTS



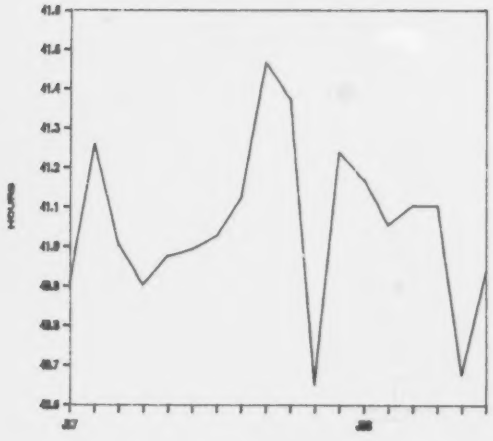
MANUFACTURING PRODUCTION WORKER INDICATORS
January 1987 to June 1988

| | Average Weekly Hours* (Hours) | | Average Manhours* (Thousands) | |
|---|---|---|---|---|
| 1987 | Unadj. | Adj. | Unadj. | Adj. |
| January | 40.5 | 40.9 | 13,020.2 | 13,231.9 |
| February | 40.6 | 41.3 | 13,052.4 | 13,305.2 |
| March | 40.8 | 41.0 | 13,171.5 | 13,318.0 |
| April | 40.7 | 40.9 | 13,174.9 | 13,308.0 |
| May | 41.1 | 41.0 | 13,334.9 | 13,375.0 |
| June | 41.2 | 41.0 | 13,515.3 | 13,421.4 |
| July | 40.7 | 41.0 | 13,312.7 | 13,474.4 |
| August | 41.0 | 41.1 | 13,460.9 | 13,501.4 |
| September | 41.8 | 41.5 | 13,793.1 | 13,575.9 |
| October | 41.5 | 41.4 | 13,676.6 | 13,554.6 |
| November | 41.1 | 40.7 | 13,561.5 | 13,308.6 |
| December | 41.9 | 41.2 | 13,731.4 | 13,462.2 |
| 1988 | Unadj. | Adj. | Unadj. | Adj. |
| January | 40.8 | 41.2 | 13,281.5 | 13,483.8 |
| February | 40.4 | 41.1 | 13,083.6 | 13,323.4 |
| March | 40.9 | 41.1 | 13,164.7 | 13,311.1 |
| April | 40.9 | 41.1 | 13,208.2 | 13,341.6 |
| May | 40.8 | 40.7 | 13,185.3 | 13,225.0 |
| June | 41.1 | 40.9 | 13,391.4 | 13,298.3 |

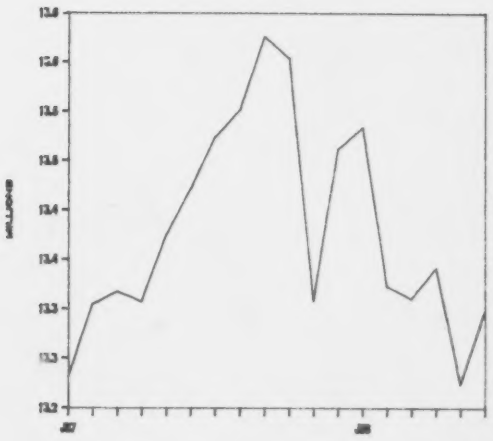
| | Average Hourly Earnings* (Dollars) | | Average Weekly Earnings* (Dollars) | |
|---|---|---|---|---|
| 1987 | Unadj. | Adj. | Unadj. | Adj. |
| January | 9.05 | 9.00 | 366.53 | 367.63 |
| February | 9.07 | 9.03 | 368.24 | 373.09 |
| March | 9.07 | 9.06 | 370.06 | 371.92 |
| April | 9.04 | 9.06 | 367.93 | 370.15 |
| May | 9.03 | 9.07 | 371.13 | 371.87 |
| June | 9.16 | 9.19 | 377.39 | 375.89 |
| July | 9.16 | 9.16 | 372.81 | 375.82 |
| August | 9.14 | 9.17 | 374.74 | 376.62 |
| September | 9.30 | 9.30 | 388.74 | 386.81 |
| October | 9.22 | 9.25 | 382.63 | 383.40 |
| November | 9.27 | 9.27 | 381.00 | 376.48 |
| December | 9.31 | 9.27 | 390.09 | 382.44 |
| 1988 | Unadj. | Adj. | Unadj. | Adj. |
| January | 9.30 | 9.26 | 379.44 | 380.58 |
| February | 9.31 | 9.27 | 376.12 | 381.07 |
| March | 9.38 | 9.37 | 383.64 | 385.57 |
| April | 9.38 | 9.40 | 383.64 | 385.96 |
| May | 9.41 | 9.46 | 383.93 | 384.31 |
| June | 9.37 | 9.40 | 385.11 | 383.58 |

*These services have been adjusted to First Quarter 1987 benchmarks.

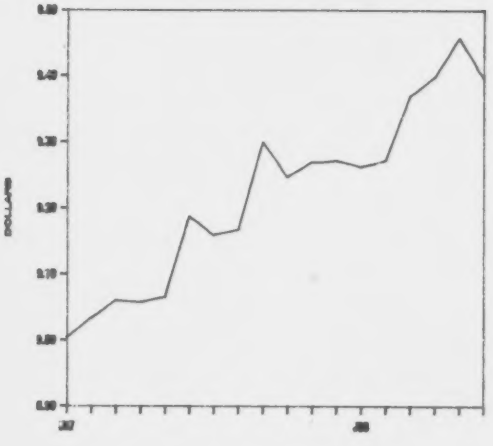
AVERAGE WEEKLY HOURS



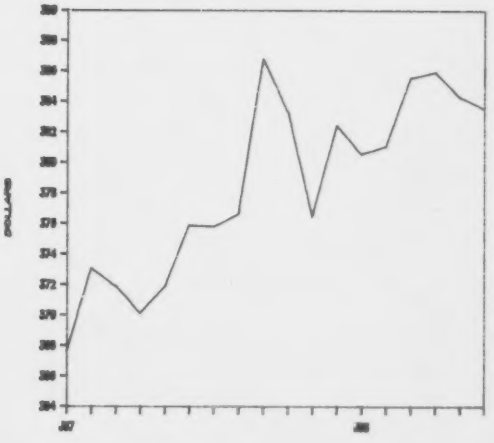
AVERAGE MANHOURS



AVERAGE HOURLY EARNINGS



AVERAGE WEEKLY EARNINGS

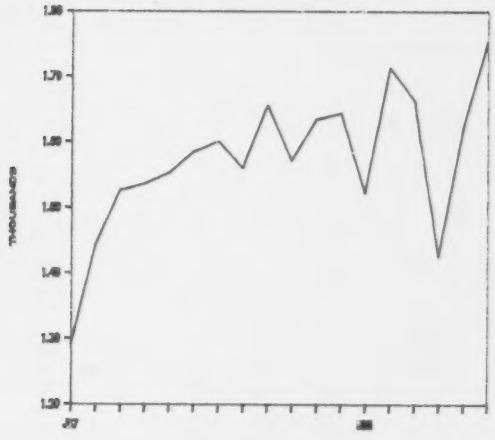


BUSINESS INDICATORS
January 1987 to June 1988

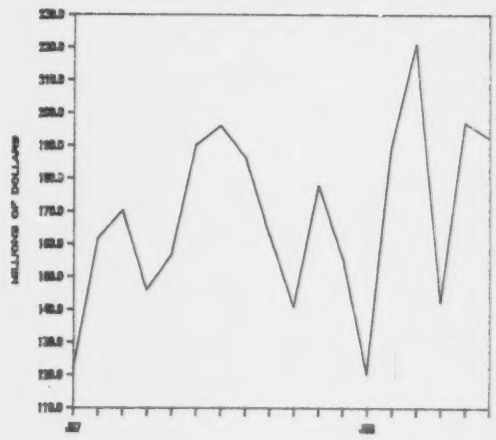
| | New Business Incorporations (Number) | | Valuation of Bldg. Permits ($ Millions) | | New Vehicle Registrations (Number) | |
|---|---|---|---|---|---|---|
| 1987 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 1,237 | 1,293 | 111.8 | 122.2 | 41,798 | 41,840 |
| February | 1,453 | 1,444 | 123.4 | 161.9 | 28,975 | 34,169 |
| March | 1,707 | 1,527 | 195.0 | 176.3 | 41,798 | 39,960 |
| April | 1,694 | 1,537 | 157.4 | 146.1 | 43,113 | 40,105 |
| May | 1,582 | 1,554 | 165.1 | 156.6 | 39,956 | 36,192 |
| June | 1,584 | 1,586 | 258.0 | 190.3 | 47,997 | 41,882 |
| July | 1,624 | 1,602 | 190.1 | 196.2 | 46,707 | 41,965 |
| August | 1,541 | 1,561 | 185.2 | 186.7 | 41,958 | 40,855 |
| September | 1,519 | 1,656 | 148.5 | 163.0 | 42,661 | 38,712 |
| October | 1,593 | 1,573 | 148.5 | 141.0 | 36,593 | 36,159 |
| November | 1,436 | 1,636 | 171.4 | 178.0 | 31,180 | 38,494 |
| December | 1,638 | 1,645 | 127.8 | 156.2 | 29,350 | 40,764 |
| 1988 | Unadj. | Adj. | Unadj. | Adj. | Unadj. | Adj. |
| January | 1,451 | 1,523 | 110.8 | 120.4 | 32,226 | 32,098 |
| February | 1,724 | 1,714 | 144.9 | 189.9 | 35,797 | 42,313 |
| March | 1,861 | 1,665 | 252.9 | 221.1 | 42,684 | 41,003 |
| April | 1,573 | 1,426 | 153.2 | 142.4 | 40,207 | 37,472 |
| May | 1,650 | 1,622 | 209.4 | 197.2 | 41,767 | 37,798 |
| June | 1,749 | 1,754 | 261.2 | 192.6 | 42,562 | 37,237 |

| | Electrical Power Sales (Mil. of KWH) | | Taxable Retail Sales ($ Millions) | |
|---|---|---|---|---|
| 1987 | Unadj. | Adj. | Unadj. | Adj. |
| January | 4,142.9 | 3,571.5 | 2,388.1 | 2,767.2 |
| February | 4,221.3 | 3,769.0 | 3,569.4 | 3,926.7 |
| March | 3,879.1 | 3,777.1 | 2,985.7 | 3,152.8 |
| April | 3,381.9 | 3,741.0 | 3,109.4 | 3,242.3 |
| May | 3,177.8 | 3,787.6 | 3,472.1 | 3,220.9 |
| June | 3,756.6 | 3,884.8 | 3,579.4 | 3,488.7 |
| July | 4,237.3 | 3,938.0 | 3,352.7 | 3,376.3 |
| August | 4,511.6 | 4,024.6 | 3,082.5 | 2,897.1 |
| September | 3,972.2 | 3,856.5 | 3,658.5 | 3,729.4 |
| October | 3,396.8 | 3,855.6 | 3,123.3 | 3,226.5 |
| November | 3,326.4 | 3,827.8 | 3,583.5 | 3,396.7 |
| December | 3,929.5 | 3,910.0 | 3,861.0 | 3,360.3 |
| 1988 | Unadj. | Adj. | Unadj. | Adj. |
| January | 4,709.7 | 4,067.1 | 3,781.8 | 4,397.4 |
| February | 4,448.0 | 3,967.9 | 3,501.8 | 3,843.9 |
| March | 4,008.3 | 3,895.3 | 2,935.0 | 3,092.7 |
| April | 3,518.9 | 3,901.2 | 2,934.9 | 3,063.6 |
| May | 3,251.7 | 3,875.7 | 3,570.8 | 3,312.4 |
| June | 3,704.3 | 3,822.8 | 3,541.0 | 3,444.6 |

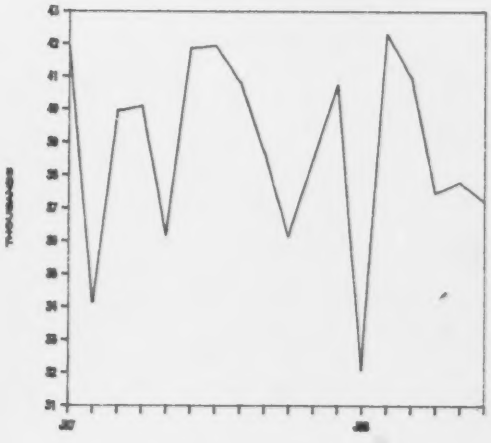
NEW BUSINESS INCORPORATIONS



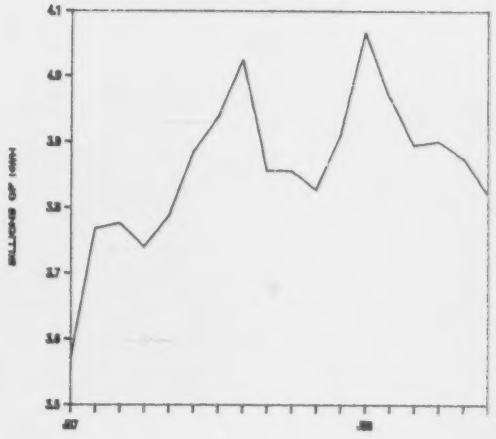
VALUATION OF BUILDING PERMITS



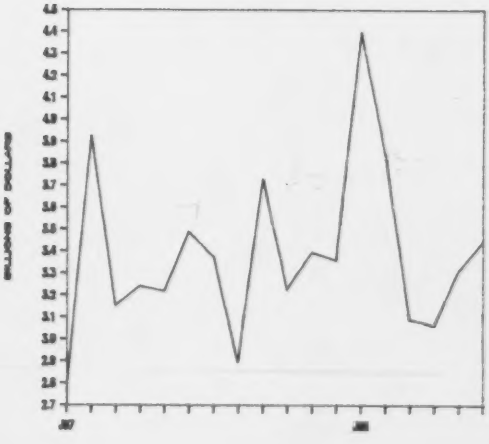
NEW VEHICLE REGISTRATIONS



ELECTRICAL POWER SALES



TAXABLE RETAIL SALES

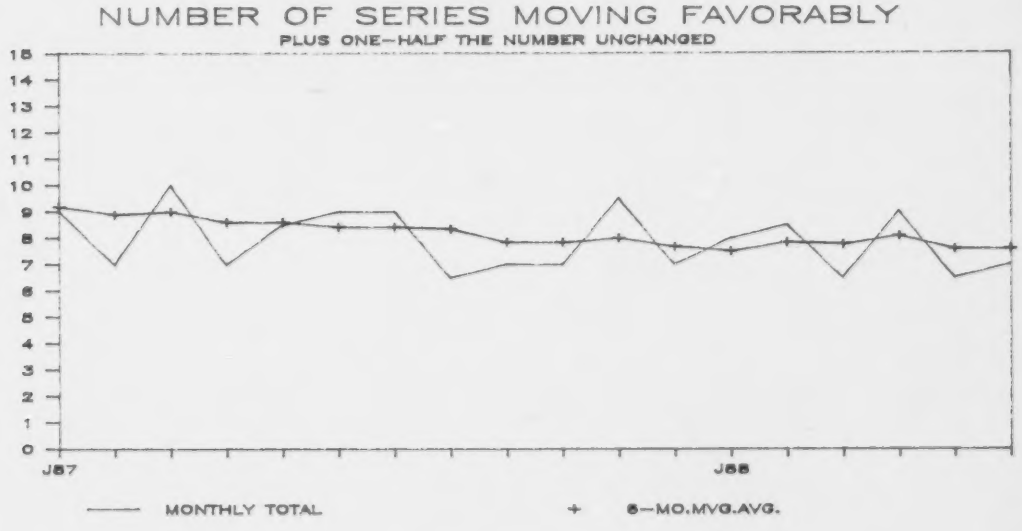


| DATA SUMMARY<br>JUNE 1988<br>(SEASONALLY ADJUSTED DATA) | Jun. 1988 | May. 1988 | Jun. 1987 | Percent & (Direction**) of Change<br>May. '88-<br>Jun. '88 | <br>Jun. '87-<br>Jun. '88 |
|---|---|---|---|---|---|
| EMPLOYMENT | | | | | |
| *Nonagricultural Wage & Salary Employment (000) | 2,783.0 | 2,773.6 | 2,677.0 | 0.3 (+) | 4.0 (+) |
| *Manufacturing Employment (000) | 428.6 | 427.0 | 430.7 | 0.4 (+) | -0.5 (-) |
| UNEMPLOYMENT | | | | | |
| *Total Unemployment Rate (%) | 3.8 | 3.7 | 4.3 | (-) | (+) |
| Average Weekly Initial Claims | 6,375 | 6,507 | 5,561 | -2.0 (+) | 14.6 (-) |
| Average Weekly Insured Unemployment Rate (%) | 1.0 | 0.9 | 1.1 | (-) | (+) |
| Unemployment Insurance Final Payments | 1,960 | 1,685 | 2,257 | 16.3 (-) | -13.2 (+) |
| MANUFACTURING PRODUCTION WORKERS | | | | | |
| *Average Weekly Hours | 40.9 | 40.7 | 41.0 | 0.5 (+) | -0.2 (-) |
| *Average Manhours (000) | 13,298.3 | 13,225.0 | 13,421.4 | 0.6 (+) | -0.9 (-) |
| *Average Hourly Earnings ($) | 9.40 | 9.46 | 9.19 | -0.6 (-) | 2.3 (+) |
| *Average Weekly Earnings ($) | 383.58 | 384.31 | 375.89 | -0.2 (-) | 2.0 (+) |
| BUSINESS | | | | | |
| New Business Incorporations | 1,754 | 1,622 | 1,586 | 8.1 (+) | 10.6 (+) |
| Valuation of Building Permits -18 Cities ($M) | 192.6 | 197.2 | 190.3 | -2.3 (-) | 1.2 (+) |
| New Vehicle Registrations | 37,237 | 37,798 | 41,882 | -1.5 (-) | -11.1 (-) |
| Electrical Power Sales (M of KWH) | 3,822.8 | 3,875.7 | 3,884.8 | -1.4 (-) | -1.6 (-) |
| Taxable Retail Sales ($M) | 3,444.6 | 3,312.4 | 3,488.7 | 4.0 (+) | -1.3 (-) |

* Revised to First Quarter 1987 benchmarks

** + = Favorable, - = Not Favorable, 0 = No Change(less than .05%)

SUMMARY



| DATA SUMMARY<br>MAY 1988<br>(SEASONALLY ADJUSTED DATA) | May.<br>1988 | Apr.<br>1988 | May.<br>1987 | Percent & (Direction**) of Change<br>Apr. '88-<br>May. '88 | <br>May. '87-<br>May. '88 |
|---|---|---|---|---|---|
| EMPLOYMENT | | | | | |
| *Nonagricultural Wage & Salary Employment (000) | 2,773.6 | 2,774.2 | 2,668.0 | -0.0 (0) | 4.0 (+) |
| *Manufacturing Employment (000) | 427.0 | 426.3 | 429.2 | 0.2 (+) | -0.5 (-) |
| UNEMPLOYMENT | | | | | |
| *Total Unemployment Rate (%) | 3.7 | 3.6 | 4.2 | (-) | (+) |
| Average Weekly Initial Claims | 6,507 | 5,759 | 5,093 | 13.0 (-) | 27.8 (-) |
| Average Weekly Insured Unemployment Rate (%) | 0.9 | 0.9 | 0.9 | (0) | (0) |
| Unemployment Insurance Final Payments | 1,685 | 1,476 | 1,661 | 14.2 (-) | 1.5 (-) |
| MANUFACTURING PRODUCTION WORKERS | | | | | |
| *Average Weekly Hours | 40.7 | 41.1 | 41.0 | -1.0 (-) | -0.7 (-) |
| *Average Manhours (000) | 13,225.0 | 13,341.6 | 13,375.0 | -0.9 (-) | -1.1 (-) |
| *Average Hourly Earnings ($) | 9.46 | 9.40 | 9.07 | 0.6 (+) | 4.3 (+) |
| *Average Weekly Earnings ($) | 384.31 | 385.96 | 371.87 | -0.4 (-) | 3.3 (+) |
| BUSINESS | | | | | |
| New Business Incorporations | 1,622 | 1,426 | 1,554 | 13.7 (+) | 4.4 (+) |
| Valuation of Building Permits -18 Cities ($M) | 197.2 | 142.4 | 156.6 | 38.5 (+) | 25.9 (+) |
| New Vehicle Registrations | 37,798 | 37,472 | 36,192 | 0.9 (+) | 4.4 (+) |
| Electrical Power Sales (M of KWH) | 3,875.7 | 3,901.2 | 3,787.6 | -0.7 (-) | 2.3 (+) |
| Taxable Retail Sales ($M) | 3,312.4 | 3,063.6 | 3,220.9 | 8.1 (+) | 2.8 (+) |

| DATA SUMMARY<br>APRIL 1988<br>(SEASONALLY ADJUSTED DATA) | Apr.<br>1987 | Mar.<br>1987 | Apr.<br>1986 | Percent & (Direction**) of Change<br>Mar. '88-<br>Apr. '88 | <br>Apr. '87-<br>Apr. '88 |
|---|---|---|---|---|---|
| EMPLOYMENT | | | | | |
| *Nonagricultural Wage & Salary Employment (000) | 2,774.2 | 2,771.1 | 2,664.2 | 0.1 (+) | 4.1 (+) |
| *Manufacturing Employment (000) | 426.3 | 426.4 | 428.5 | -0.0 (0) | -0.5 (-) |
| UNEMPLOYMENT | | | | | |
| *Total Unemployment Rate (%) | 3.6 | 3.6 | 4.3 | (0) | (+) |
| Average Weekly Initial Claims | 5,759 | 7,236 | 5,263 | -20.4 (+) | 9.4 (-) |
| Average Weekly Insured Unemployment Rate (%) | 0.9 | 0.9 | 0.9 | (0) | (0) |
| Unemployment Insurance Final Payments | 1,476 | 2,098 | 1,828 | -29.6 (+) | -19.3 (+) |
| MANUFACTURING PRODUCTION WORKERS | | | | | |
| *Average Weekly Hours | 41.1 | 41.1 | 40.9 | 0.0 (0) | 0.5 (+) |
| *Average Manhours (000) | 13,341.6 | 13,311.1 | 13,308.0 | 0.2 (+) | 0.3 (+) |
| *Average Hourly Earnings ($) | 9.40 | 9.37 | 9.06 | 0.3 (+) | 3.8 (+) |
| *Average Weekly Earnings ($) | 385.96 | 385.57 | 370.15 | 0.1 (+) | 4.3 (+) |
| BUSINESS | | | | | |
| New Business Incorporations | 1,426 | 1,665 | 1,537 | -14.4 (-) | -7.2 (-) |
| Valuation of Building Permits -18 Cities ($M) | 142.4 | 221.1 | 146.1 | -35.6 (-) | -2.5 (-) |
| New Vehicle Registrations | 37,472 | 41,003 | 40,105 | -8.6 (-) | -6.6 (-) |
| Electrical Power Sales (M of KWH) | 3,901.2 | 3,895.3 | 3,741.0 | 0.2 (+) | 4.3 (+) |
| Taxable Retail Sales ($M) | 3,063.6 | 3,092.7 | 3,242.3 | -0.9 (-) | -5.5 (-) |

* Revised to First Quarter 1987 benchmarks

** + = Favorable, - = Not Favorable, 0 = No Change(less than .05%)

## THE VIRGINIA LEADING AND COINCIDENT INDEXES

| Month | Leading Index (1977=100) | Monthly Percent Change | Quarterly Percent Change | Coincident Index (1977=100) | Monthly Percent Change | Quarterly Percent Change |
|---|---|---|---|---|---|---|
| January 1987 | 158.5 | -0.5 | | 139.0 | +0.2 | |
| February | 158.9 | +0.2 | +0.7 | 141.1 | +1.5 | +1.4 |
| March | 160.3 | +0.9 | | 141.7 | +0.4 | |
| April | 161.0 | +0.4 | | 142.5 | +0.6 | |
| May | 162.6 | +1.0 | +1.7 | 142.5 | 0.0 | +1.8 |
| June | 162.4 | -0.2 | | 144.3 | +1.2 | |
| July | 164.3 | +1.2 | | 145.8 | +1.1 | |
| August | 165.3 | +0.6 | +2.1 | 143.5 | -1.6 | +1.0 |
| September | 166.6 | +0.8 | | 144.2 | +0.5 | |
| October | 167.5 | +0.5 | | 144.0 | -0.1 | |
| November | 168.3 | +0.5 | +1.6 | 144.8 | +0.6 | +0.1 |
| December | 168.2 | -0.1 | | 145.2 | +0.2 | |
| January 1988 | 166.4 | -1.0 | | 149.7 | +3.1 | |
| February | 166.6 | +0.1 | -0.8 | 153.2 | +2.3 | +4.8 |
| March | 167.1 | +0.3 | | 151.9 | -0.8 | |
| April | 167.8 | +0.4 | | 152.2 | +0.2 | |
| May | 167.1 | -0.4 | +0.8 | 153.2 | +0.6 | +1.3 |
| June | 169.3 | +1.3 | | 155.2 | +1.3 | |

Leading Index Components: Average Weekly Hours for Production Workers, 5-month moving average; New Businesses, 6-month moving average; Building Permits, deflated to 1982 dollars, 6-month moving average; Average Weekly Initial Claims, 3-month moving average.

Coincident Index Components: Personal Income Less Transfer Payments, deflated to 1982 dollars: Industrial Production Index; Nonagricultural Wage and Salary Employment; Taxable Retail Sales, deflated to 1967 dollars by the consumer price index, 6-month moving average.

Notes: All components are seasonally adjusted.

Sources include the WEFA Group for Industrial Production Index and most recent quarter Personal Income, and the U. S. Department of Commerce for Personal Income.

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The Virginia leading and coincident indexes increased during the Second Quarter 1988 over the previous quarter. The State's leading index outperformed the national index and made up the ground lost in the first quarter. The rise in Virginia's leading index was primarily due to an increase in the valuation of building permits and a decrease in average weekly initial claims. Virginia's coincident index continued to grow but at a slower rate than in the first quarter.

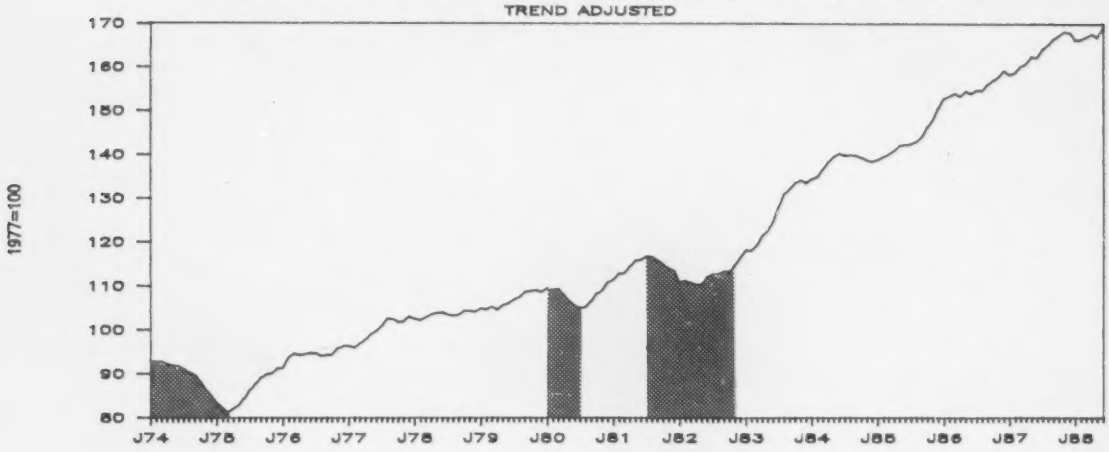
| Quarter | Total Personal Income Millions | Transfer Payments Millions | Real Personal Income ($82) Millions | Transfer Payments ($82) Millions |
|---|---|---|---|---|
| 1st Qtr 1987 | $ 92,749 | $12,160 | $79,403 | $10,417 |
| 2nd Qtr | 93,690 | 12,370 | 79,130 | 10,475 |
| 3rd Qtr | 96,060 | 12,410 | 80,350 | 10,419 |
| 4th Qtr | 99,510 | 12,550 | 81,900 | 10,329 |
| 1st Qtr 1988 | 101,190 | 13,060 | 82,800 | 10,686 |
| 2nd Qtr | 102,170 | 13,310 | 82,530 | 10,751 |

Notes: All personal income data reflects seasonally adjusted annual rates.

Sources include the WEFA Group and the Bureau of Economic Analysis, U. S. Department of Commerce.

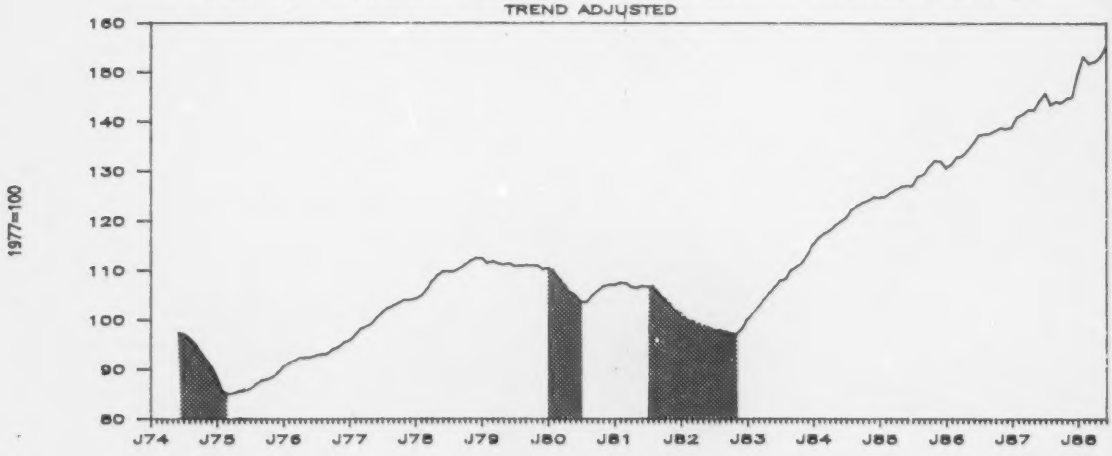
## VIRGINIA INDEX OF LEADING INDICATORS

TREND ADJUSTED




## VIRGINIA INDEX OF COINCIDENT INDICATORS

TREND ADJUSTED



# AN ANALYSIS OF VIRGINIA'S 1987 MANUFACTURING EXPORTS

Virginia's manufacturers are fortunate to be located near the ports of Virginia, including the major international facilities at Hampton Roads, as well as the port facilities in Baltimore, Philadelphia, and North Carolina. Despite the proximity of these major export facilities, Virginia lags behind the national average in value exported per workers in manufacturing and in 15 of the 20 major groups within manufacturing.[1] Over $11,000 of goods were exported for each manufacturing worker nationwide. In Virginia, that value was less than $9,500.[2]

The export value per worker is strongly biased in certain industries in Virginia by the presence of one or a few firms. The presence of Newport News Shipbuilding and Dry Dock Company and its large number of workers involved in the building of U. S. Navy ships significantly reduces the average value of export per worker in the transportation equipment industry. The average U. S. worker produced over $21,000 in exports while the average Virginia worker produced less than $6,000 in exports in the transportation equipment industry.

The manufacturing industries in which Virginia exported a greater value per worker than the nation as a whole are included in Table 1. Virginia's tobacco products industry led the State in value of export per worker at over $105,000. Exports from Virginia accounted for almost 59 percent of the nation's total tobacco products. The average U. S. tobacco products worker was responsible for just over $41,000 in exports.

In the industrial and commercial machinery and computer equipment group, the average Virginia worker produced over $48,000 in export goods--well above the national average of just over $21,000. Virginia, however, accounted for only 1.8 percent of the national value of exports.

Virginia was over the national average in the value of export per worker in three additional industries. In the rubber and miscellaneous plastic products industry, Virginia's workers averaged almost $6,000 in exports compared with slightly over $4,500 for the average U. S. worker. In Virginia's substantial textile mill products industry, the average worker produced just under $3,000 in export goods compared with the U. S. average of almost $2,700. Virginia's relatively small instruments industry produced exports of over $15,800 per worker compared to the U. S. average of under $15,400.

The manufacturing industries in which Virginia produced smaller values of exports per worker than the U. S. are included in Table 2. Virginia's small miscellaneous manufacturing industries [3] provided the second largest differential (Transportation equipment, discussed above was first) in export value per worker produced in the U. S. over export value per worker in Virginia. Just over $18,000 was exported for each worker as compared with the national average of over $33,000. The very small petroleum refining and related industries category in Virginia produced $16,000 in exports per worker. The national average was almost $28,000 per worker. While the average U. S. chemicals and allied products industry worker produced over $25,500 in exports, the average for Virginia was just over $16,000. The electrical workers produced over $12,500 of exports on an average for the U. S. and under $7,000 on average in Virginia. Ten other manufacturing industries produced less value of exports per workers in Virginia than the national average as delineated in Table 2.

Virginia's non-durable manufacturing industries produced an average export value of almost $10,500 which is above the national average of less than

TABLE 1
VIRGINIA MANUFACTURING INDUSTRIES
WITH EXPORT VALUE PER WORKER GREATER THAN THE
THE US INDUSTRY AVERAGE (1987)

| INDUSTRY | SIC CODE | US EXPORTS ($ MILLS) | VA EXPORTS ($ THOUS) | VA EXPORT SHARE(%) | US EXPORT VALUE($) PER EMPLOYED | VA EXPORT VALUE($) PER EMPLOYED |
|---|---|---|---|---|---|---|
| TOBACCO | 21 | 2,316 | 1,364,904 | 58.93 | 41,090 | 105,392 |
| NON ELECT MACH | 35 | 42,974 | 775,990 | 1.81 | 21,046 | 48,658 |
| RUBBER-MISC PLASTICS | 30 | 3,757 | 97,490 | 2.59 | 4,584 | 5,910 |
| INSTRUMENTS | 38 | 10,685 | 82,416 | 0.77 | 15,358 | 15,874 |
| TEXTILES | 22 | 1,969 | 134,849 | 6.85 | 2,693 | 2,990 |

TABLE 2
VIRGINIA MANUFACTURING INDUSTRIES
WITH EXPORT VALUE PER WORKER LESS THAN THE
THE US INDUSTRY AVERAGE (1987)

| INDUSTRY | SIC CODE | US EXPORTS ($ MILLS) | VA EXPORTS ($ THOUS) | VA EXPORT SHARE(%) | US EXPORT VALUE($) PER EMPLOYED | VA EXPORT VALUE($) PER EMPLOYED |
|---|---|---|---|---|---|---|
| TRANSPORT EQUIP | 37 | 43,137 | 247,703 | 0.57 | 21,403 | 5,783 |
| MISC MFG | 39 | 12,285 | 66,855 | 0.54 | 33,219 | 18,387 |
| PETROLEUM PRODS | 29 | 4,586 | 7,002 | 0.15 | 27,794 | 16,041 |
| CHEMICALS | 28 | 26,353 | 541,280 | 2.05 | 25,656 | 16,145 |
| ELEC-ELECTR EQUIP | 36 | 26,536 | 271,597 | 1.02 | 12,636 | 6,822 |
| PRIMARY METAL | 33 | 6,092 | 30,106 | 0.49 | 8,092 | 2,899 |
| FOOD PRODUCTS | 20 | 12,654 | 101,972 | 0.81 | 7,730 | 2,629 |
| LEATHER | 31 | 726 | 255 | 0.04 | 4,814 | 145 |
| LUMBER | 24 | 3,983 | 33,544 | 0.84 | 5,385 | 1,309 |
| PAPER | 26 | 5,727 | 90,866 | 1.59 | 8,440 | 5,823 |
| STONE-CLAY-GLASS | 32 | 2,096 | 24,141 | 1.15 | 3,585 | 1,511 |
| FURNITURE | 25 | 563 | 6,537 | 1.16 | 1,094 | 267 |
| PRINTING-PUBLISHING | 27 | 1,545 | 8,761 | 0.57 | 1,026 | 268 |
| FABRICATED METAL | 34 | 6,318 | 68,924 | 1.09 | 4,422 | 3,719 |
| APPAREL | 23 | 1,562 | 20,800 | 1.33 | 1,402 | 716 |

$8,000. Virginia's high value of exports per person in both tobacco and textiles produced this result. In durable goods manufacturing, Virginia's workers contributed an average of under $8,000 to exports. The national average for durable goods exports was almost $14,000 per person.

Further study into Virginia's manufacturing industries that export less than the U. S. average would undoubtably yield a number of firms that produce products for special purposes (i.e., for inclusion on ships produced by Newport News Shipbuilding and Dry Dock Company). However, it is also clear that many industries are not fully utilizing their export potential.

Cletus Coughlin of the Federal Reserve Bank of St. Louis suggests that increased spending by state governments to promote exports may yield positive returns.[4] Hopefully, Virginia's efforts through the new Department of World Trade and other initiatives of the Governor can bring Virginia to a level at or above the national value of exports per worker.

Thomas E. McGraw

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1. Utilizing the Standard Industrial Classification (SIC) breakout.
2. Figures are based on 1987 F.A.S. value in U. S. dollars from goods originating in Virginia and the U. S. and 1987 average Establishment Employment (sources: U. S. Department of Commerce, VEC).
3. Export classifications used include miscellaneous manufacturers goods and miscellaneous manufacturing products.
4. Cletus C. Coughlin, Review, Federal Reserve Bank, St. Louis, Vol. 70, No.3, May/June 1988, pp. 34-42.

# HISTORICAL SUMMARY
## PERFORMANCE OF INDICATORS OVER THE BUSINESS CYCLE

GENERAL INFORMATION

For those interested in studying the business cycle in Virginia, this publication includes several of the economic time series for which data is readily available on a monthly basis. From time to time, new series will be added and, if necessary, others presently included will be discontinued.

Business Cycle Turning Points

The shaded spaces on the charts represent the 1973-75, 1980, and 1981-82 recessions as designated by the National Bureau of Economic Research (NBER). The beginning of a recession is defined as the month when aggregate economic activity in the U. S. reaches a cyclical high, from which it begins to turn down, and the end as the month when it reaches a cyclical low, from which it begins to turn up. According to NBER, the 1973-75 recession began in November 1973 and ended in March 1975, the 1980 recession began in January 1980 and ended in July 1980, and the 1981-82 recession began in July 1981 and ended in November 1982.

Seasonal Adjustment

To correlate changes in a time series and changes in the business cycle it is desirable to eliminate, insofar as possible, the effect of irrelevant factors from the data comprising the series. All series currently published in indicators have been adjusted to minimize regular seasonal fluctuations in the data in order to show only activity related to the business cycle.

Months for Cyclical Dominance (MCD)

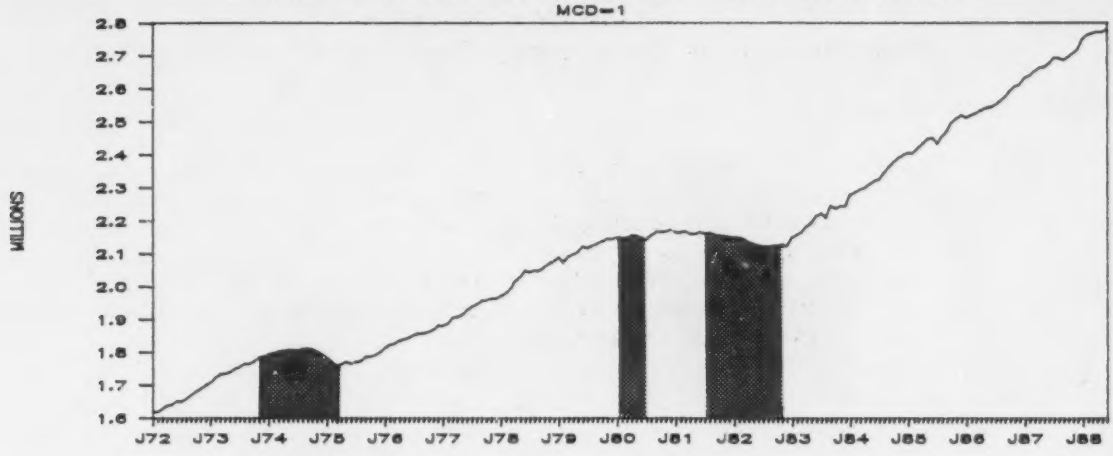
After seasonal adjustment there often remains a significant degree of purely random change, the effect of which can be minimized with a moving average equal in length to the MCD of the series. The MCD is an estimate of the length of the moving average which will reveal the cyclical pattern among the welter of random fluctuations in the data--the greater the MCD the more random and less cyclically significant are monthly changes in the series. Where noted, charts of historical data in this publication represent seasonally adjusted figures which have been averaged according to the MCD of each series.

## DATA SOURCES

Nonagricultural Wage and Salary Employment.....Virginia Employment Commission (VEC)
Manufacturing Employment.....VEC
Total Unemployment Rate.....VEC
Average Weekly Initial Claims.....VEC
Insured Unemployment Rate.....VEC
Unemployment Insurance Final Payments.....VEC
Average Manhours.....VEC
Average Hourly Earnings.....VEC
Average Weekly Earnings.....VEC
Average Workweek.....VEC
New Business Incorporations.....Virginia State Corporation Commission
Valuation of Building Permits - 18 Cities.....Local Building Inspectors
New Vehicle Registrations.....Virginia State Division of Motor Vehicles
Electrical Power Sales.....Virginia Power, Appalachian Power Co., Delmarva Electric Co., Tennessee Power Company
Taxable Retail Sales.....Virginia State Department of Taxation
Taxable Retail Sales/CPI.....Virginia State Department of Taxation

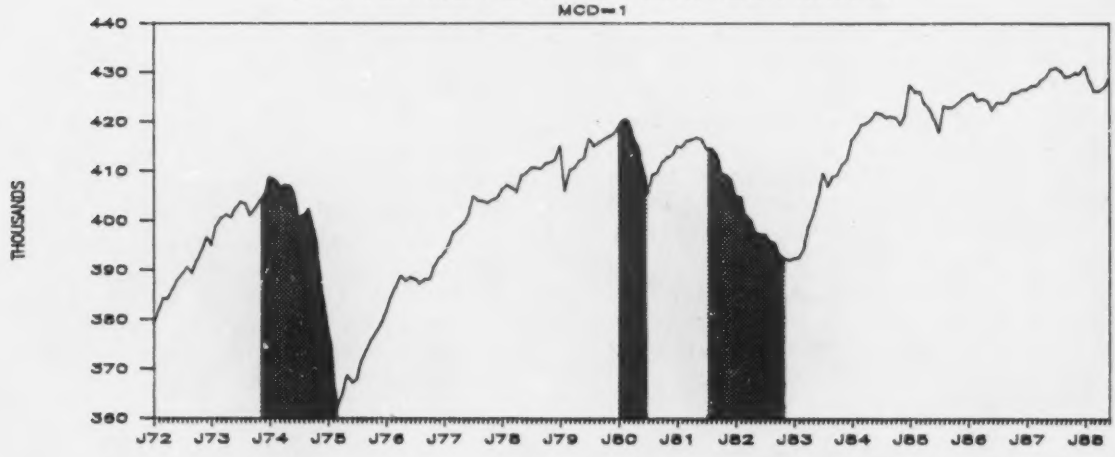
## NONAG WAGE & SALARY EMPLOYMENT

MCD=1



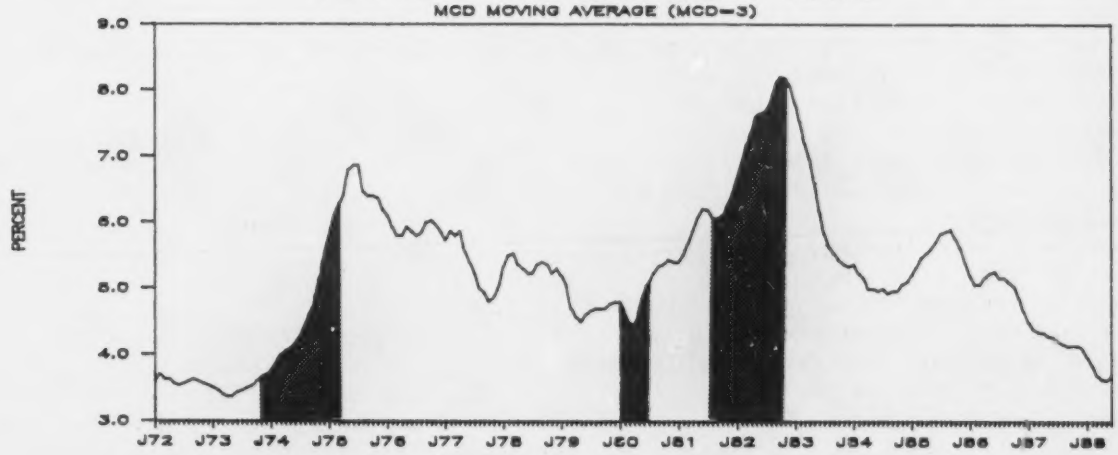

## MANUFACTURING EMPLOYMENT

MCD=1



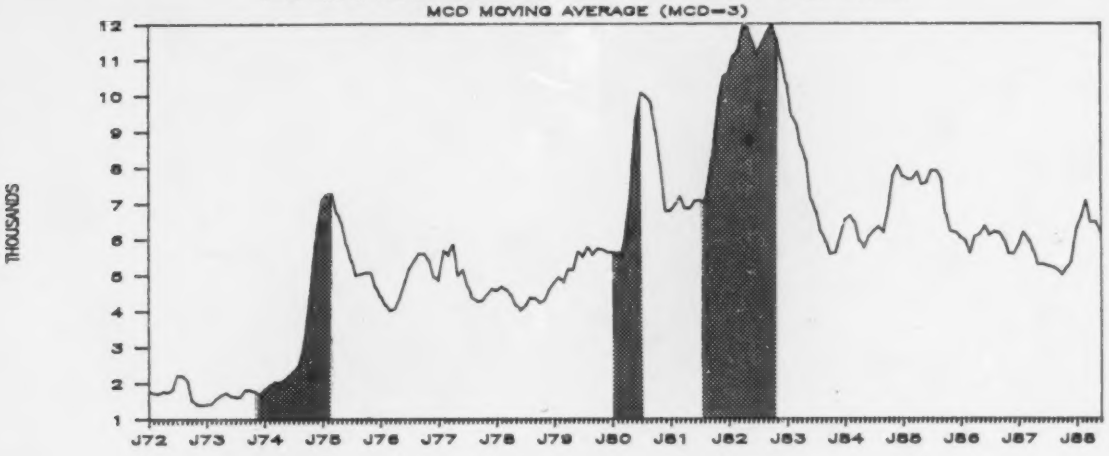

## TOTAL UNEMPLOYMENT RATE

MCD MOVING AVERAGE (MCD=3)



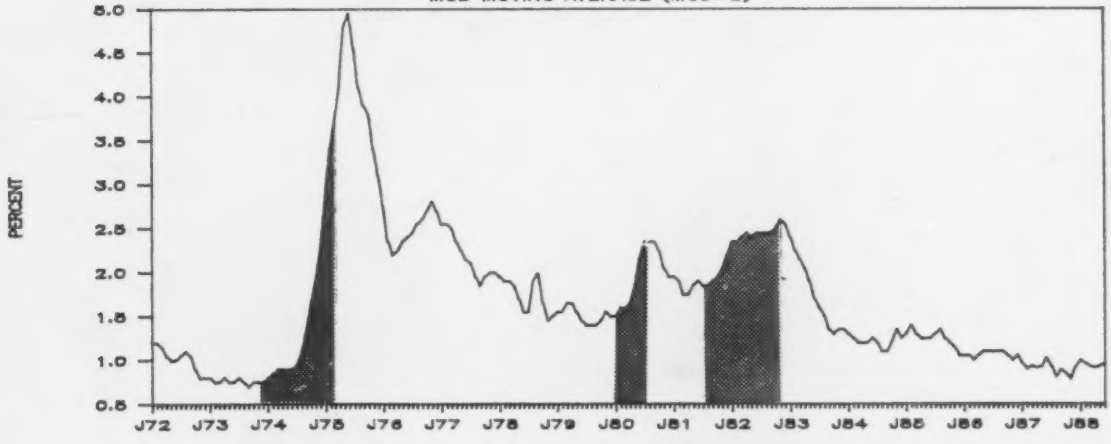
## AVERAGE WEEKLY INITIAL CLAIMS

MCD MOVING AVERAGE (MCD=3)



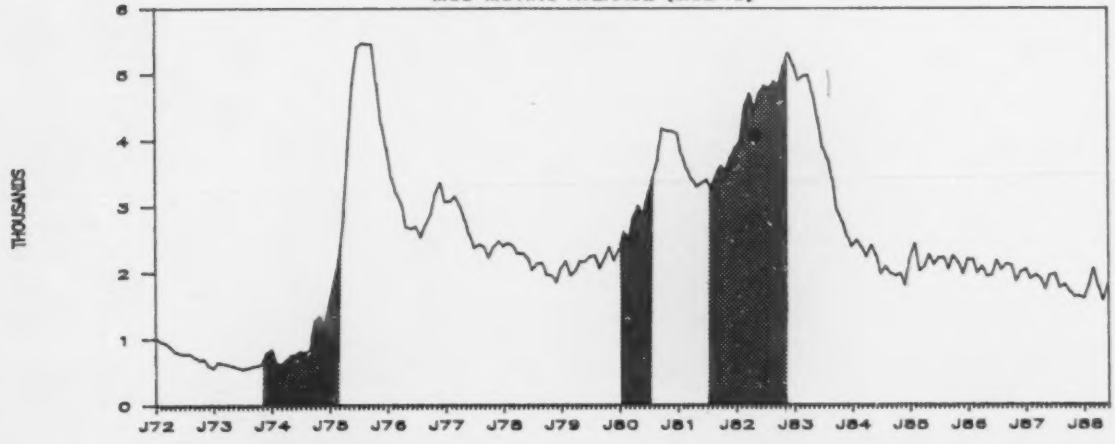

## INSURED UNEMPLOYMENT RATE

MCD MOVING AVERAGE (MCD=2)



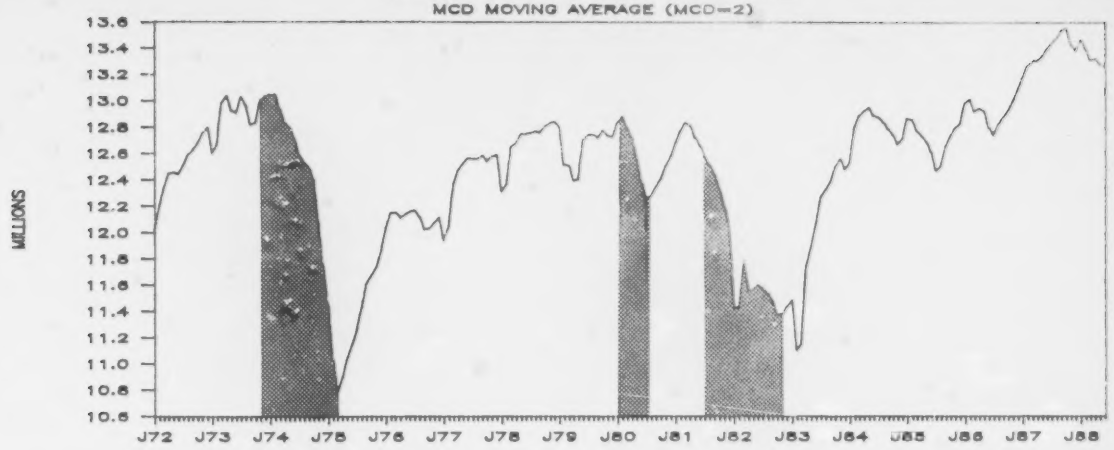

## U. I. FINAL PAYMENTS

MCD MOVING AVERAGE (MCD=3)



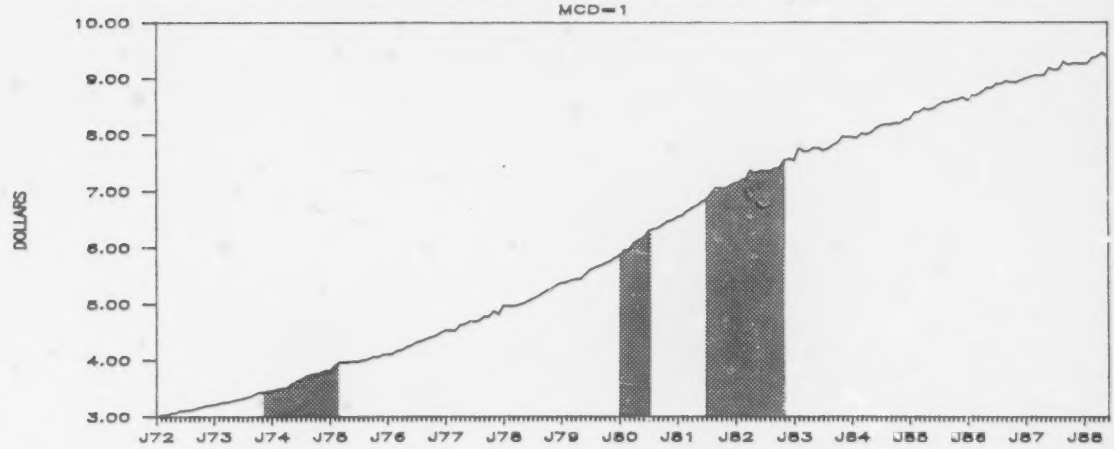
## AVERAGE MANHOURS

MCD MOVING AVERAGE (MCD=2)



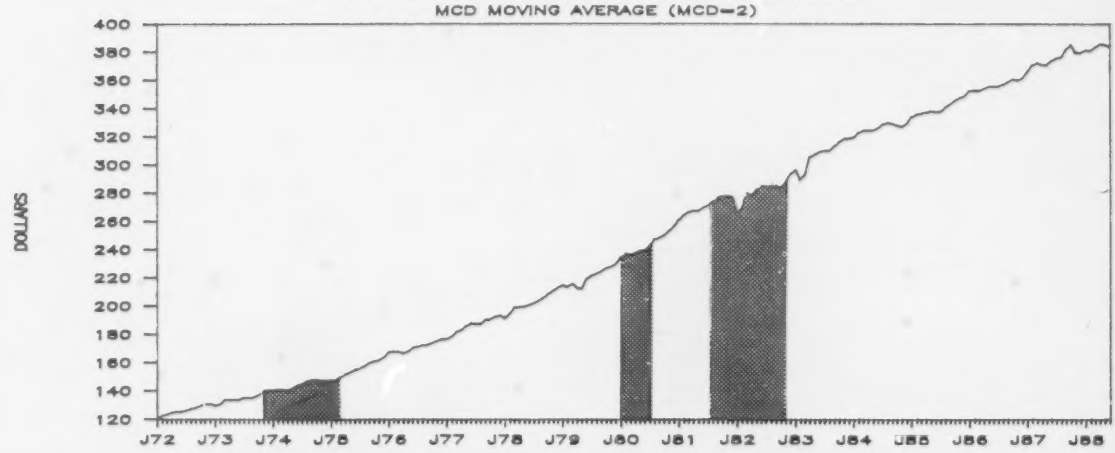

## AVERAGE HOURLY EARNINGS

MCD=1



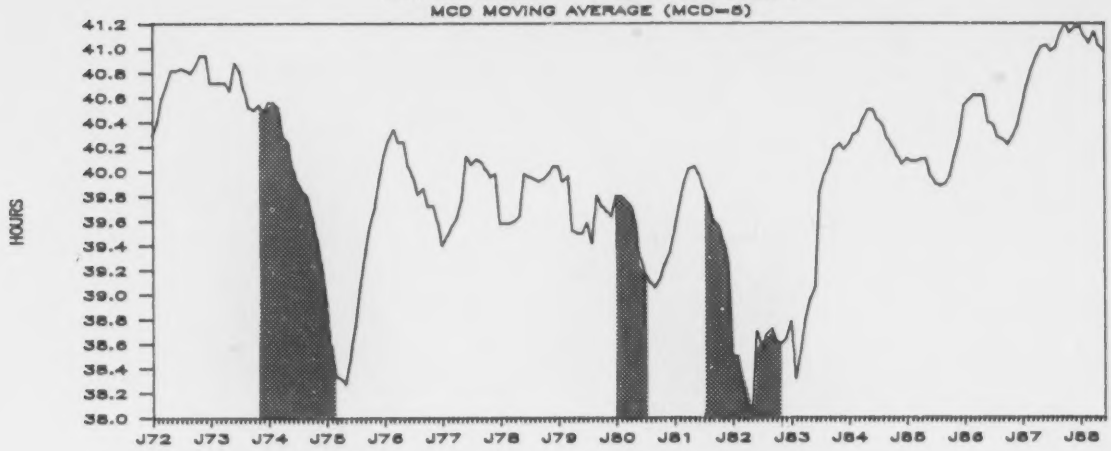

## AVERAGE WEEKLY EARNINGS

MCD MOVING AVERAGE (MCD=2)



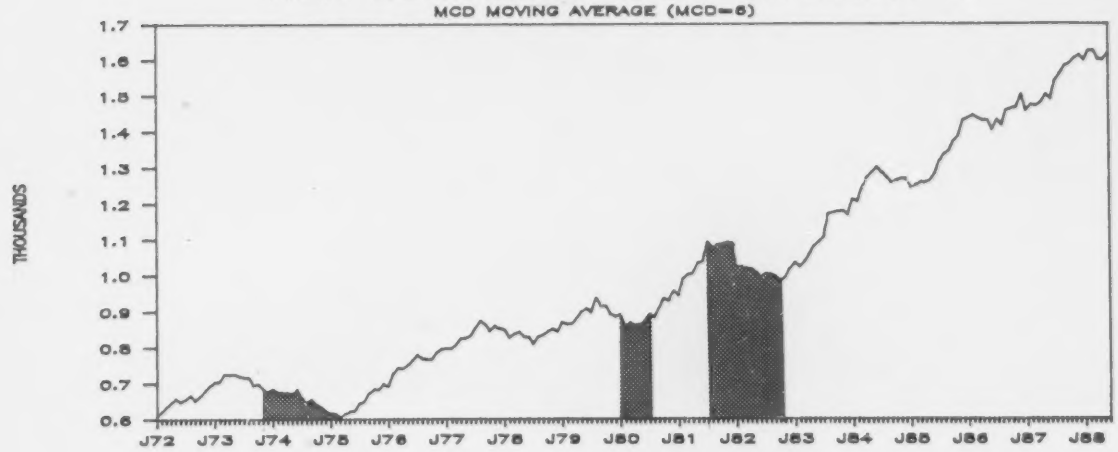
## AVERAGE WORKWEEK

MCD MOVING AVERAGE (MCD=6)



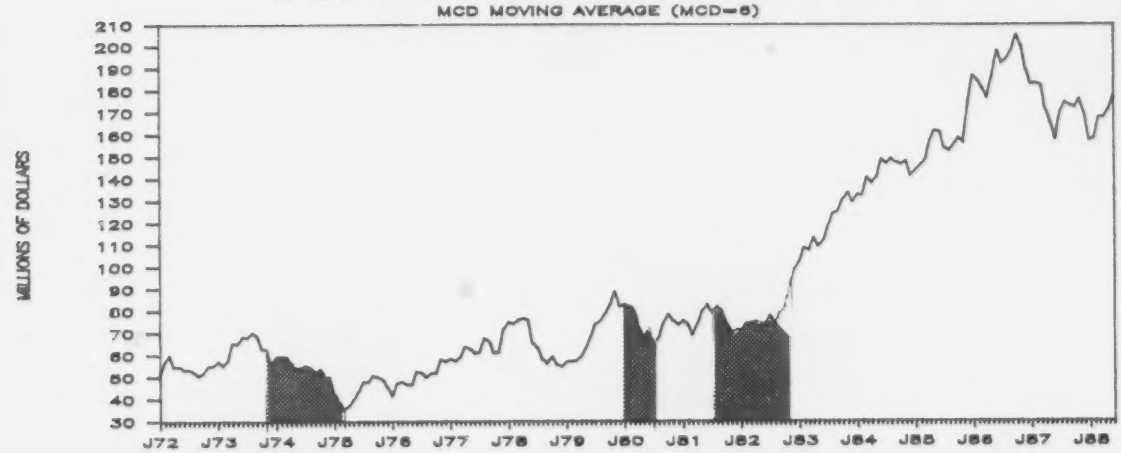

## NEW BUSINESS INCORPORATIONS

MCD MOVING AVERAGE (MCD=6)



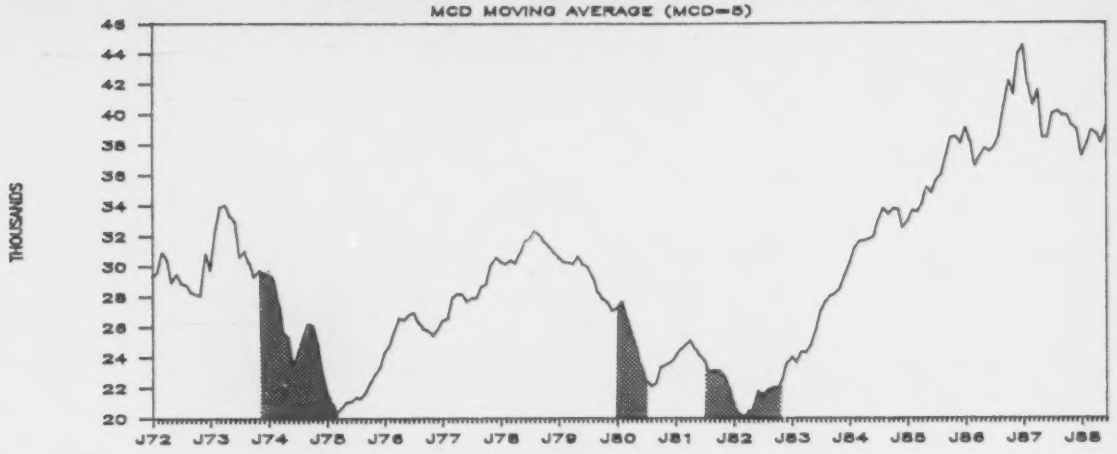

## VALUATION OF BUILDING PERMITS

MCD MOVING AVERAGE (MCD=6)



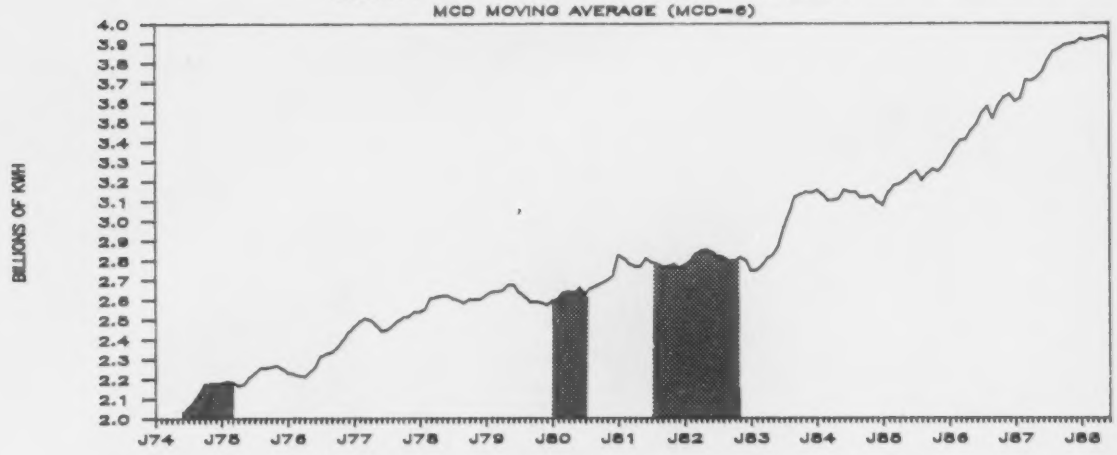
## NEW VEHICLE REGISTRATIONS

MCD MOVING AVERAGE (MCD=5)



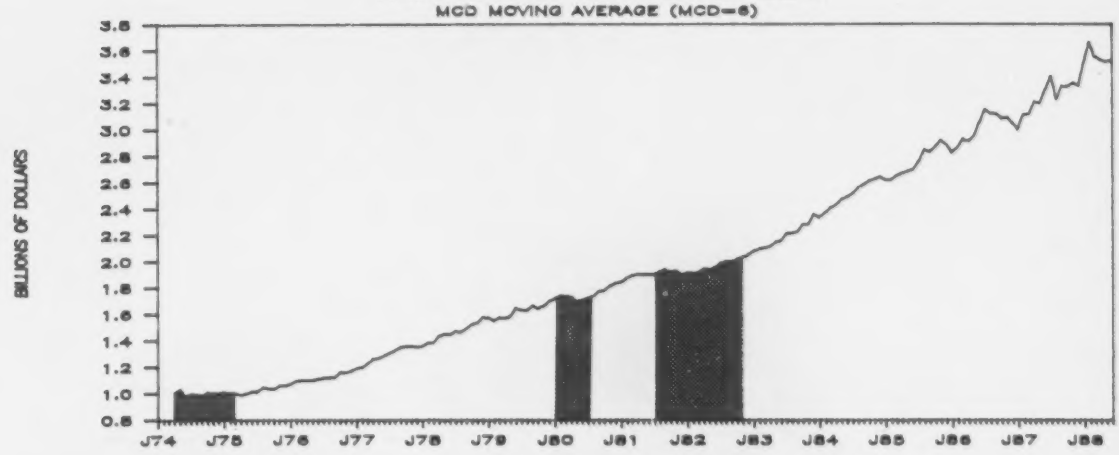

## ELECTRICAL POWER SALES

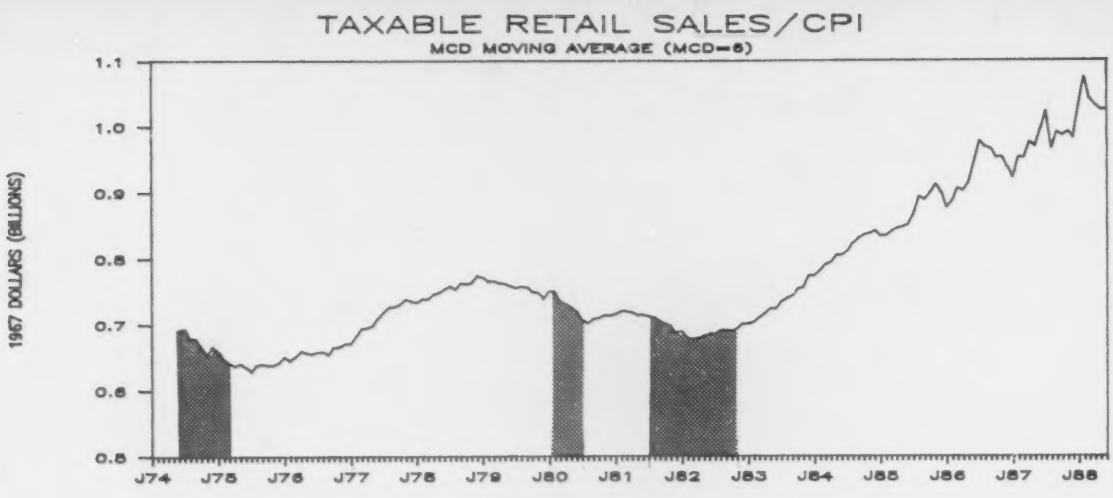
MCD MOVING AVERAGE (MCD=6)




## TAXABLE RETAIL SALES

MCD MOVING AVERAGE (MCD=6)




TAXABLE RETAIL SALES/CPI
MCD MOVING AVERAGE (MCD=6)
1967 DOLLARS (BILLIONS)
1.1
1.0
0.9
0.8
0.7
0.6
0.5
J74
J75
J76
J77
J78
J79
J80
J81
J82
J83
J84
J85
J86
J87
J88

*Virginia Employment Commission*
*Economic Information Services Division*
*Post Office Box 1358*
*Richmond, Virginia 23211*

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